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Environmental Impact Report

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Embarcadero Office Terraces

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Publication Date: September 16, 1983
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Comment Period: September 16, 1983
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Environmental Impact Report

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DRAFT 82.129E

PUBLICATION DATE: SEPTEMBER 16, 1983
PUBLIC HEARING DATE: OCTOBER 20, 1983
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WRITTEN COMMENTS SHOULD BE SENT TO THE ENVIRONMENTAL REVIEW OFFICER
450 McALLISTER ST, SAN FRANCISCO, CA. 94102

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Embarcadero Office
Terraces : [draft]
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I. SUMMARY

A. PROJECT DESCRIPTION

The proposed Embarcadero Office Terraces would be a mixed-use development containing primarily office space with restaurant space and parking. The project site is located at 1000 Front Street, bounded by The Embarcadero, Green Street, Front Street and Union Street. The site is located in Assessor's Block 110, Lot 1 and has an area of approximately 46,200 square feet. The property is owned by the Port of San Francisco and would be leased by the project sponsor. The project sponsor, Seawall Lot 321 Limited Partnership desires to provide an office building with restaurant space that would make a positive contribution to the City and yield a return on investment while complying with the Port's land use objectives and the terms of the ground lease granted by the City for the project site.

The proposed project would consist of a 40-foot, four-story building containing approximately 189,000 total gross square feet including 139,000 gross square feet of office space and 3,000 square feet of ground-level restaurant space. Approximately 41,000 square feet in a basement level would provide 20,000 square feet of storage space and 50 parking spaces. The main entrance would be on Front Street with rear access from The Embarcadero via a publicly accessible garden court. Access to the one loading dock on the ground level and the subsurface parking facilities would be from Green Street. The project would require a variance for exception to the off-street parking requirement of 256 spaces.

The project sponsor estimates construction would cost approximately $11 million (in 1983 dollars) and take about 18 months.

B. ENVIRONMENTAL IMPACTS

1. Initial Study

An initial study was prepared for the project to identify potentially significant environmental issues that could result from the proposed development; these issues are covered in this EIR. Certain potential environmental issues were determined to be insignificant and are therefore not addressed in this EIR; these include operational noise, biology, health hazards, and public services and utilities. A copy of the Final Initial Study is attached to this report as Appendix A, page A-1.

2. Land Use

The 304-space surface parking lot existing on the site would be replaced by the proposed 40-foot office building. The project would comply with zoning, height and floor area requirements of the Planning Code for the site. A variance would be required to provide 50 parking spaces on-site instead of the 256 spaces required by the Planning Code. The project site is within Northern Waterfront Special Use District No. 3 and subject to additional regulations imposed by the provisions of the Northeastern Waterfront Plan. Project land use would conform with planning recommendations of BCDC and the San Francisco Port Commission (see page 47).

3. Visual Quality and Urban Design

The proposed project would generally conform to the provisions of the Urban Design Plan, the Northeastern Waterfront Plan of the San Francisco Comprehensive Plan and the Guiding Downtown Development planning study (see page 50 of this EIR).

4. Historic and Cultural Resources

The proposed project would not require demolition of any historic buildings. The site is mapped in an area of potential archaeological resources; one or more Gold Rush hulks might be encountered during construction. The site is within the Northeastern Waterfront Historic District (see page 64). The project would require a Certificate of Appropriateness from the City Planning Commission for development within the Historic District.

5. Employment, Housing and Fiscal Considerations

The project would create permanent employment for about 570 persons, including 556 office jobs and 14 jobs for restaurant and janitorial/service workers. Approximately 610 additional jobs in the Bay Area would be indirectly created through the multiplier effect. The project site presently contains a self-service parking lot which sustains no full-time on-site employment (see page 66).

The project would increase the demand for housing in San Francisco. According to the San Francisco Department of City Planning formula the project would generate a demand for 123 units in San Francisco (see page 66).

Estimated revenues to the City generated by the proposed project would be approximately $551,700 annually (in 1983 dollars), an increase of about $509,000.

6. Transportation, Circulation and Parking

The proposed project would generate about 2,905 daily person trips; approximately 10% of these, or 290 trips, would occur during the p.m. peak hour (see page 78).

The project would generate about 35 peak hour auto trips. Peak hour auto travel generated by cumulative downtown development projects (under formal review, approved, under construction or newly constructed as of June 1, 1983) would increase the existing volume by about 4% to 13%. The addition of project traffic would not change intersection service levels in the site area (see page 83).

The proposed project would increase the projected peak hour load (reflecting cumulative downtown development) for the two Muni lines within walking distance (one-quarter mile) of the project by approximately 15% (inbound toward downtown) (see page 85).

The project would generate a parking demand for about 70 long-term and 10 short-term parking spaces, and would also result in the removal of a 304-space surface parking lot. The loss of the existing parking lot and parking demand generated by the project would increase surrounding parking occupancy from about 82% to 96%, virtually saturating the existing parking supply (see page 92).

7. Air Quality and Climate

No measurable effect on regional emissions is anticipated due to the project; however, the project in conjunction with cumulative development in the City and the Bay Area would have a measurable effect on regional air quality (see page 99). The proposed project is not anticipated to have any adverse wind impacts at the pedestrian level (see page 102).

8. Noise

During construction, approximately 18 months, noise and vibration-generating activities would create exterior noise levels of up to 95-105 dBA within the project site. Noise levels inside nearby buildings would reach 77-87 dBA depending upon whether windows are open or closed. Normal work routine would be disrupted at these times (see page 103).

9. Energy

Total estimated annual energy use within the proposed project (based upon other City projects and Title 24 compliance) would be 18 billion BTU, the equivalent of 3,200 barrels of oil. Project-generated traffic would consume about 105,000 gallons of gasoline annually, equivalent to 2,300 barrels of oil (see page 106).

10. Geology, Hydrology and Seismicity

About 40,000 tons of artificial fill would be excavated and removed from the site. Primary on-site impacts related to an earthquake with the Richter magnitude of the 1906 San Francisco earthquake would include liquefaction, densification and lateral spreading. Flooding by tsunamis or seiches is also a potential hazard (see page 111).

11. Public Services - Cumulative

Cumulative development in the project area is increasing the demand for public services due to the resulting additional population, property and traffic (see page 117).

12. Growth Inducement

The proposed Embarcadero Office Terraces would be part of approximately 18.4 million gross square feet of downtown office space (including the base of Telegraph Hill area) under construction or proposed to be added to the existing 56.6 million gross square feet of downtown office space as of January 1983. Cumulative downtown development is expected to increase the demand for housing, parking facilities, public transit services and public services and utilities. This development would increase traffic congestion and concentration of pollutants from auto emissions (page 118).

C. MITIGATION MEASURES

Mitigation measures proposed as part of the project include:

- Adherence to the OHPP guidelines by causing 123 housing units to be constructed off-site (see page 121).
- Encouragement of the use of car/van pools and flexible work hours (see page 121).
- Restriction of hours for pile driving during construction to lessen noise impacts on adjacent land uses (see page 122).
- Installation of cofferdams around the construction site as a groundwater exclusion device (see page 124).
- Integration of project security measures to minimize the need for police services (see page 125).

Mitigation measures not included in the proposed project:

The project sponsor is considering energy conservation measures (but has not made a final decision) including automated energy management and an energy audit after one year of operation (see page 123).

D. ALTERNATIVES

1. No-Project

The project site would remain a parking lot and no environmental impacts associated with the proposed project would occur. The project sponsor has rejected this alternative as inefficient and uneconomical (see page 128).

2. Mixed Use: Combined Office and Residential

This alternative would consist of a structure with the same building envelope as the proposed project but with 29,000 square feet of office space, 115,000 square feet of residential space (about 231 units) and about 97 subsurface parking spaces. This alternative represents the maximum housing mix that could be accommodated on the project site as specified in Section 215(a) of the City Planning Code. It would not comply with off-street parking requirements; therefore, like the proposed project, a variance would be required. Conditional Use authorization would be required to allow dwelling units in a configuration other than with standard rear yards.

The reduction in office space and introduction of residential use would decrease traffic impacts, traffic-generated noise and air quality impacts. The noise requirements of Title 25 of the California Administrative Code would apply. Demand for public services and energy consumption would be increased; visual impacts would be consistent with the proposed project (see page 129). This alternative was rejected by the project sponsor since office space would provide a higher return on investment than residential space. Land use objectives adopted by the Port Commission in Maritime Strategy II specify that the site be developed at the "highest and best use."

3. All Residential

This alternative would provide development only of 115,500 square feet of residential space, the maximum amount allowed according to Section 215(a) of the City Planning Code. The building form would be similar to the proposed project; however, the four-story structure would occupy approximately 35,000 square feet of the project site, about 5,000 square feet less than the proposed project. Like Alternative Two, this alternative would provide about 231 dwelling units and about 97 subsurface parking spaces.

The lack of office space with this alternative would substantially decrease traffic impacts; environmental impacts on public services would be similar to Alternative Two. The reduced site coverage compared to the proposed project and increased open space would reduce overall visual impacts. The project sponsor has rejected this alternative since the original project objectives would not be met nor would the Port's goals as specified in Maritime Strategy II (see page 130).

4. Alternative Design - Additional Office Space

This alternative would consist of a structure that would be identical to the proposed project with the exception that 20,000 gross square feet of project basement storage space would be used as office space. Alternative Three would therefore contain 159,000 square feet of office space, 3,000 square feet of restaurant space and 50 subsurface parking spaces.

The increase in office space and elimination of storage space would increase traffic impacts. Traffic-generated noise and air quality impacts would be increased but not by any measurable magnitude. This alternative would not comply with the off-street parking requirement; therefore, like the proposed project, a variance would be required. This alternative was rejected by the project sponsor because it would preclude use of basement storage space and increase traffic-associated impacts (page 132).

5. Maritime Support Use

Under this alternative, an approximately 45,000-square-foot structure would be built for use as warehouse storage for ships and/or maritime support truck parking. The building would be similar to the adjacent two-story Pacific Telephone and Telegraph warehouse west of the site and cover approximately 95% of the project site. Maritime-related vehicles could generate more local traffic and noise than the proposed project; energy consumption would be substantially less. The project sponsor has rejected this alternative since the original project objectives would not be met, nor would the land use objectives of the Port for the site (see page 133).

6. Hotel

This alternative would consist of a structure with the same building envelope as the proposed project but would contain a 225-room hotel. Energy and water consumption and daily person trips would be increased with this alternative; however, peak hour trips would be reduced compared with the proposed project. Hotel use would generate less employment and no measurable demand for housing; visual impacts would be similar to those of the project. This alternative was rejected by the project sponsor as not meeting the original project objectives; in addition, the sponsor believes another hotel in this area would not provide a reasonable return on the investment potential of the site, nor would it meet the Port's objectives for the site as stated in Maritime Strategy II (see page 134).

7. Alternative Design: No Exceptions to Planning Code

This alternative represents the maximum office space with associated required off-street parking that could be accommodated within the building height limit. Thus, 200 parking spaces and 100,000 square feet of office space would be provided. The reduction of office space compared to the project would generate fewer traffic-related impacts and a decrease in energy consumption; visual impacts would be similar to the proposed project since the same building envelope would be used. The project sponsor has rejected this alternative since it would substantially reduce the available office space on the project site, it would increase the cost of construction due to additional subsurface parking levels (especially in areas with high groundwater levels) and limit the return on project investment (see page 134).

II. PROJECT DESCRIPTION

A. LOCATION

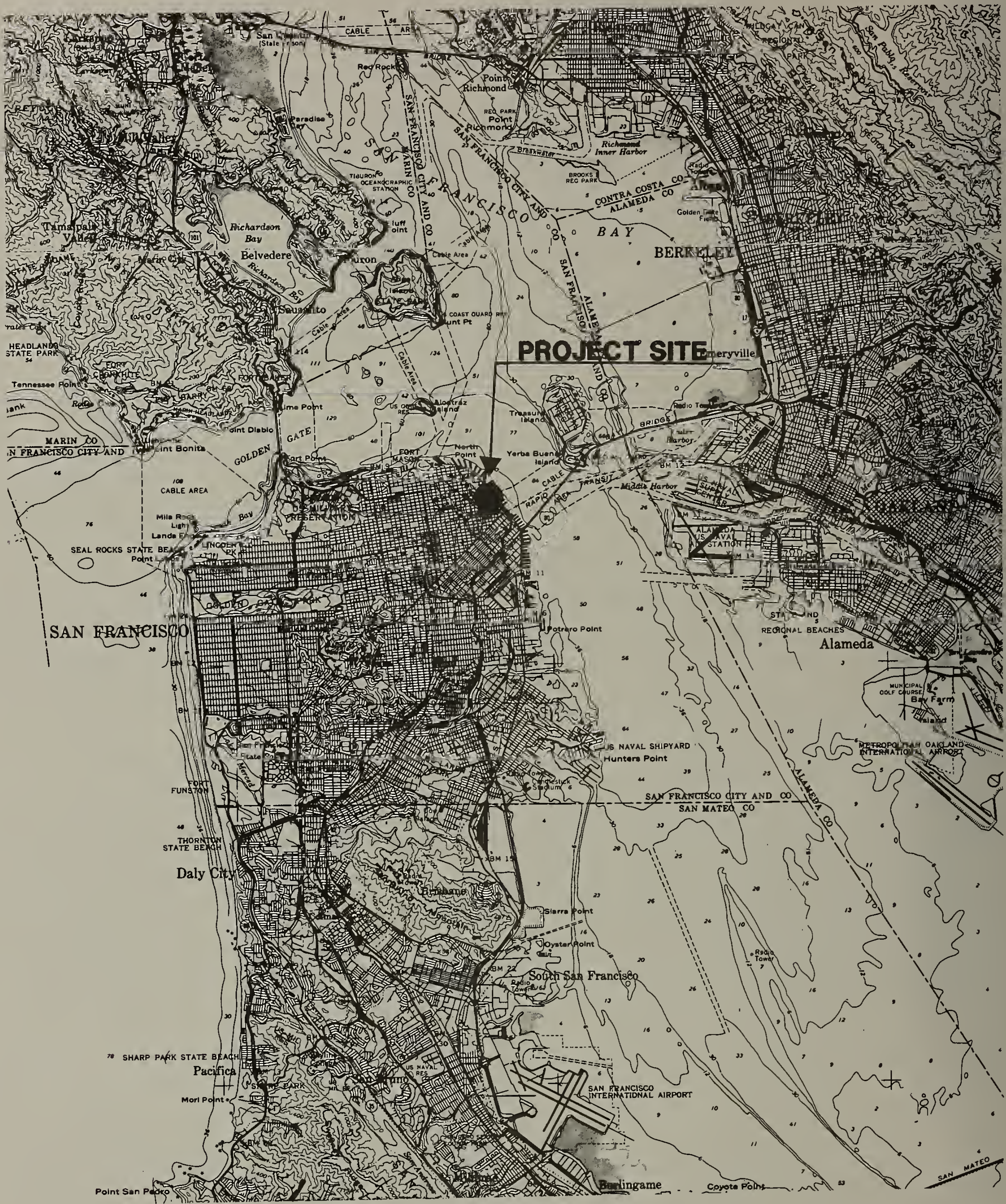
The proposed Embarcadero Office Terraces would be located on Port of San Francisco land at 1000 Front Street, bounded by The Embarcadero, and by Green, Front and Union Streets. The irregularly shaped site includes Lot 1 in Assessor's Block 110 and is approximately 46,200 square feet. The project area is within the Northern Waterfront Special Use District No. 3 and the Northeastern Waterfront Historical District. The general location of the project site is shown in Figure 1, page 10; the precise location is shown in Figure 2, page 11. The project site is in an area of the City that is experiencing revitalization and an influx of new office development.

B. OBJECTIVES OF PROJECT SPONSOR

The project sponsor, Seawall Lot 321 Limited Partnership, wishes to provide a four-story office building with large floors of office space and partial ground-floor restaurant space on property leased from the Port of San Francisco. It is the intent of the project sponsor to make a positive contribution to the City while achieving a reasonable return on investment, responding to the terms of its lease with the Port Commission and the Port's land use objectives for the site, expressed in Maritime Strategy II.

C. PROJECT CHARACTERISTICS AND SCHEDULING

The total project, including office, restaurant, storage, parking, mechanical and service space would be approximately 189,000 gross square feet. Of the gross square footage, about 139,000 square feet would be office space and 3,000 square feet would be ground-level restaurant space. The 40-foot-tall building would contain four stories with one loading dock and one level of subsurface parking (Figures 3 through 6, pages 12 through 15). The first floor would be five feet below grade and the garage level would be 14.5 feet below grade. The basement (garage level) would contain about 20,000 square feet of storage space and 21,000 square feet of parking space (Figure 7, page 16). The remaining 6,000 square feet of the total project would be mechanical and service space.



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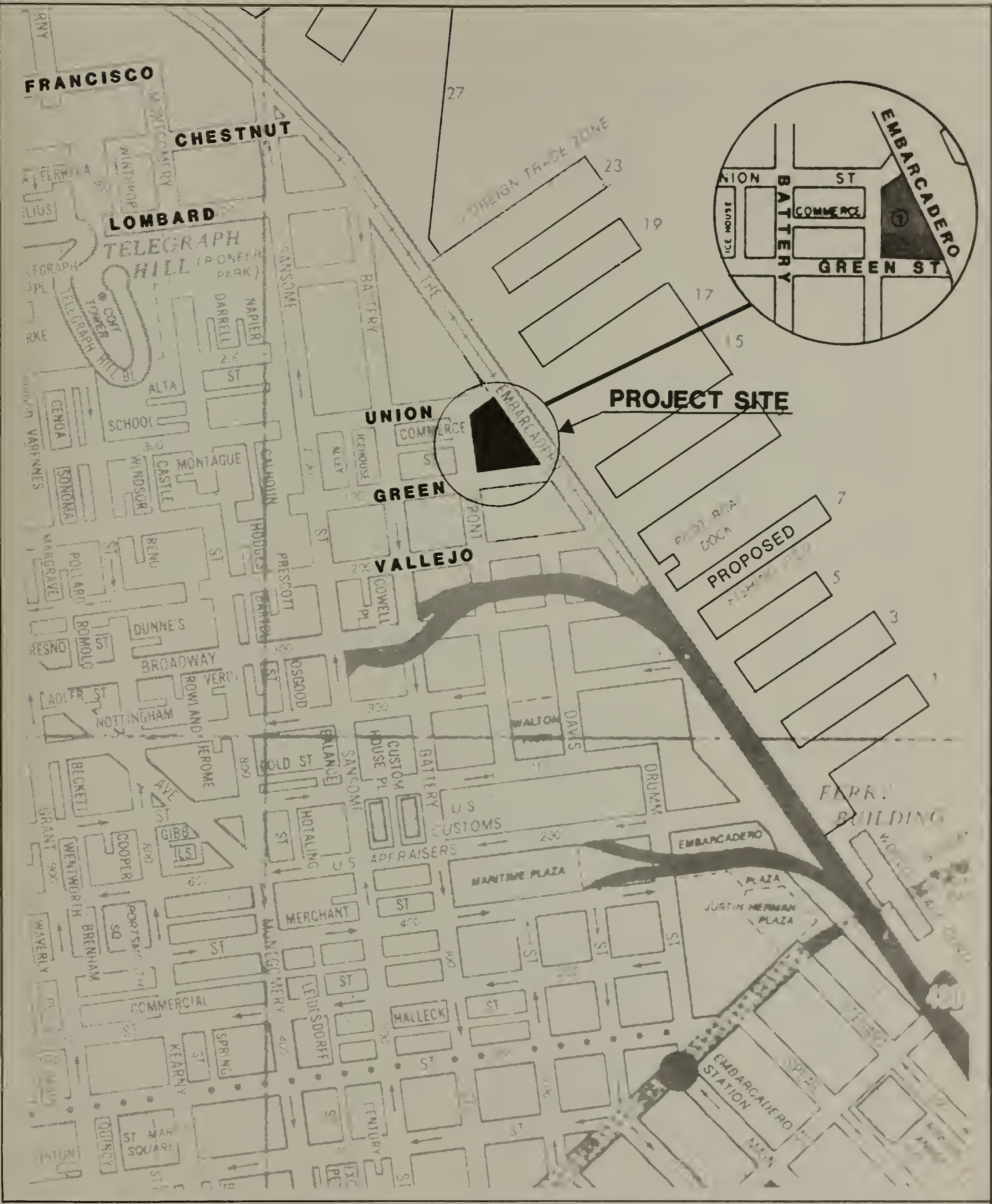
Embarcadero Office Terraces

REGIONAL LOCATION MAP

1



① LOT NUMBER

110 BLOCK NUMBER

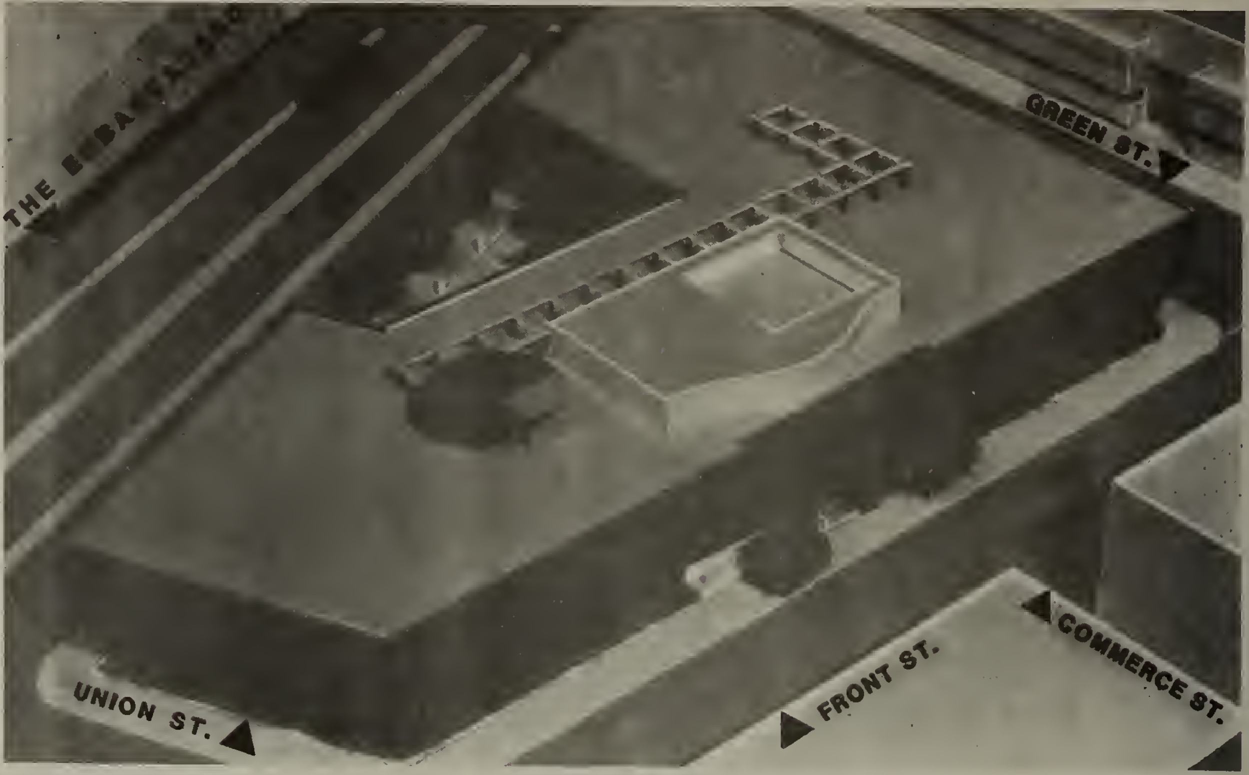
Scale 0 500 1000 1500 Feet

SOURCE: AAA

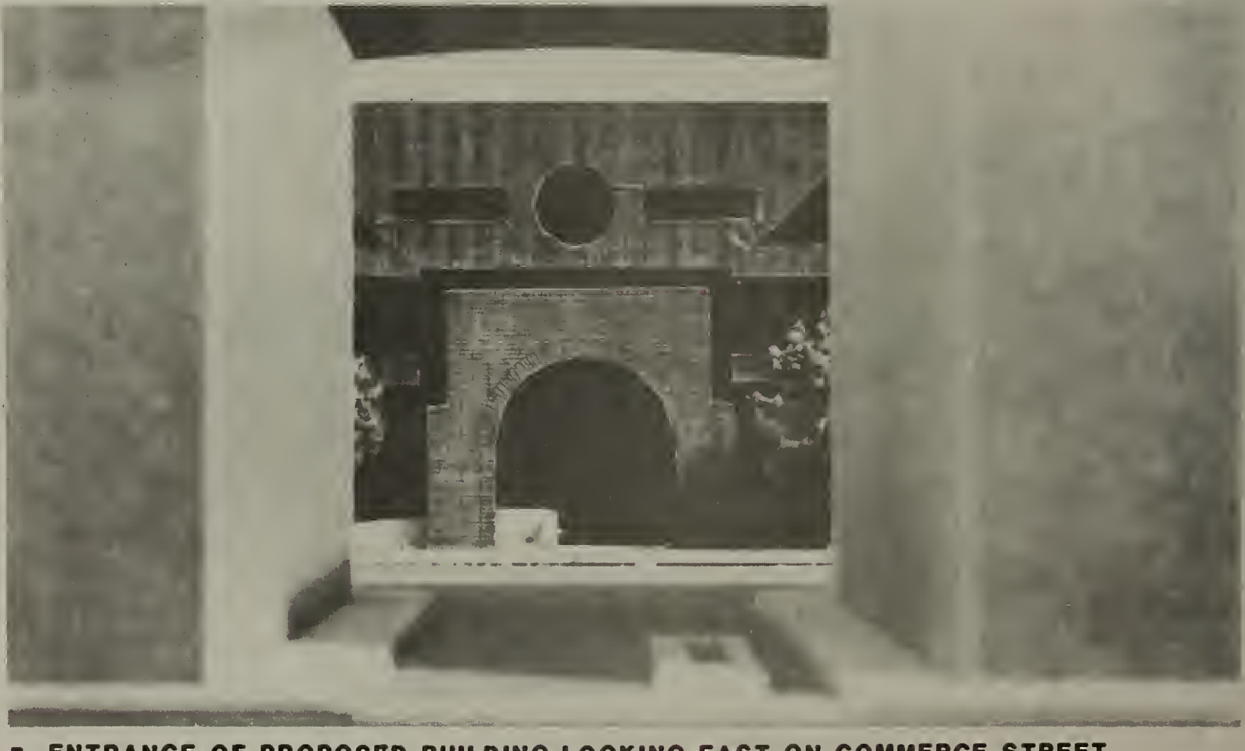
Embarcadero Office Terraces

SITE LOCATION MAP

2



a AERIAL VIEW (LOOKING SOUTHEAST).

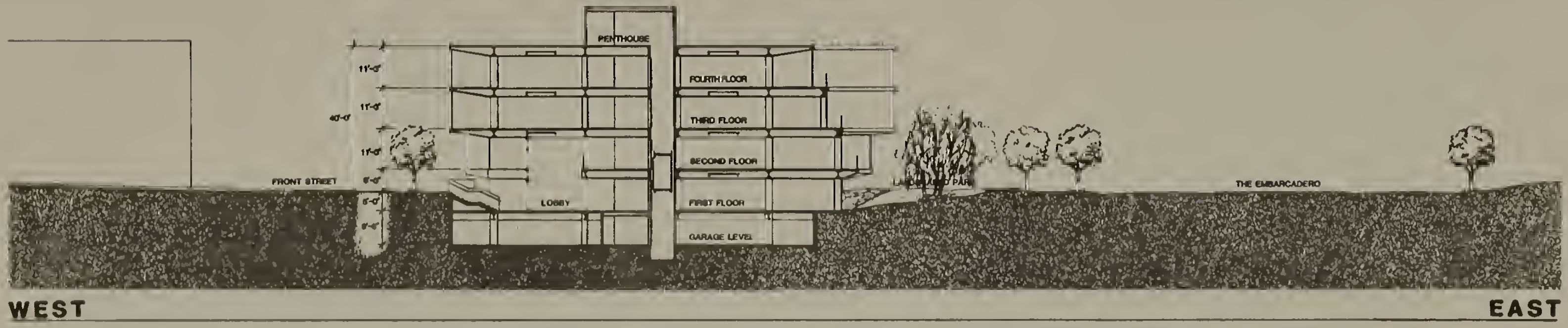


b ENTRANCE OF PROPOSED BUILDING LOOKING EAST ON COMMERCE STREET FROM BATTERY STREET.

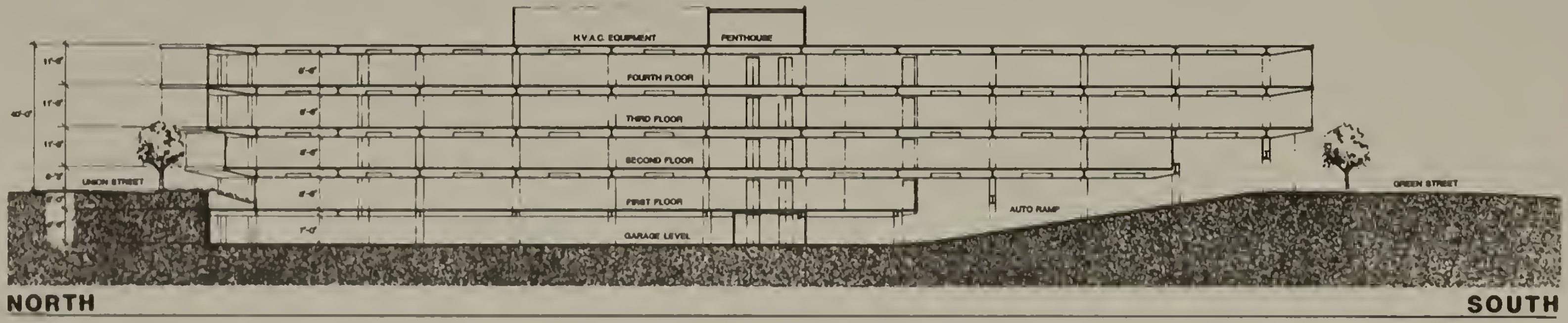
SOURCE: THE MUNSELLE/BROWN PARTENERSHIP INC.

Embarcadero Office Terraces

MODEL OF PROPOSED PROJECT **3**



SECTION A



SECTION B

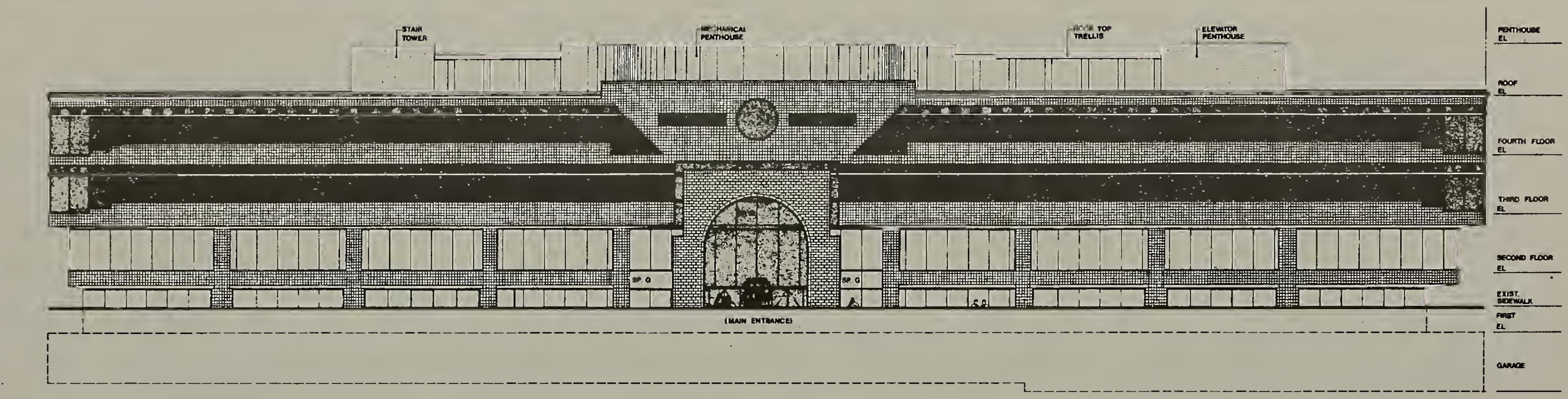
SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

SCALE 0 20 40 80 FEET

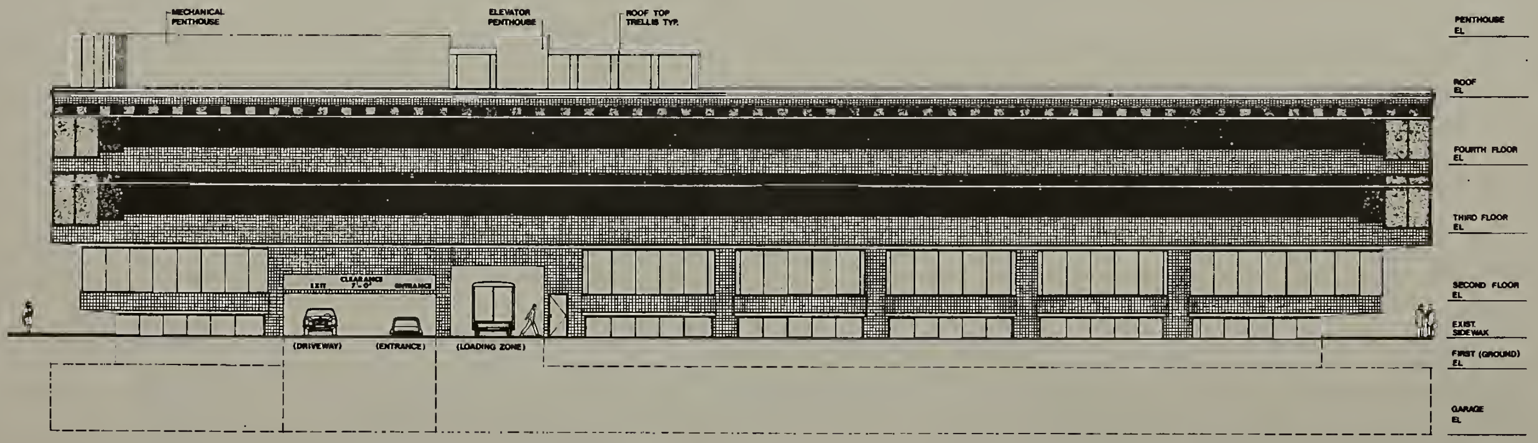
Embarcadero Office Terraces

BUILDING SECTIONS

4



WEST ELEVATION (FRONT STREET)



SOUTH ELEVATION (GREEN STREET)

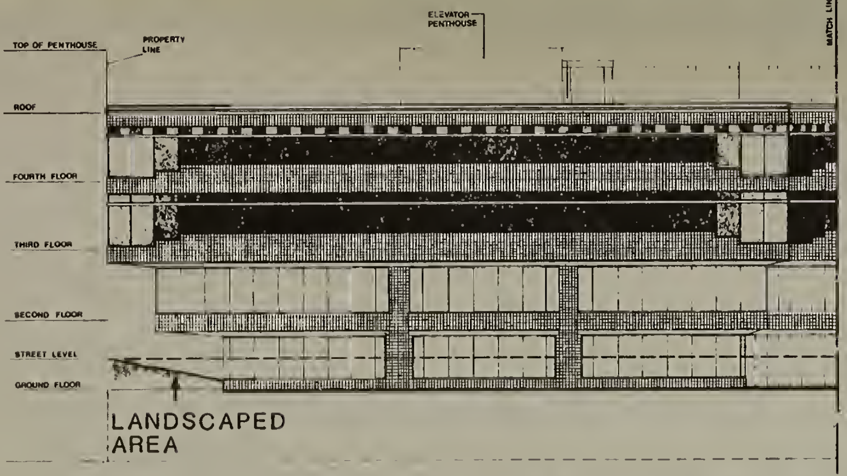
SOURCE: THE MONSELLE/BROWN PARTNERSHIP INC.

Embarcadero Office Terraces

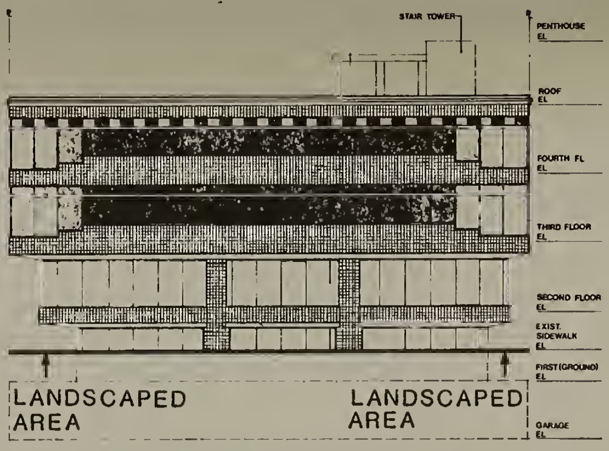
WEST AND SOUTH BUILDING ELEVATIONS

SCALE 0 5 10 20 30 50 FEET

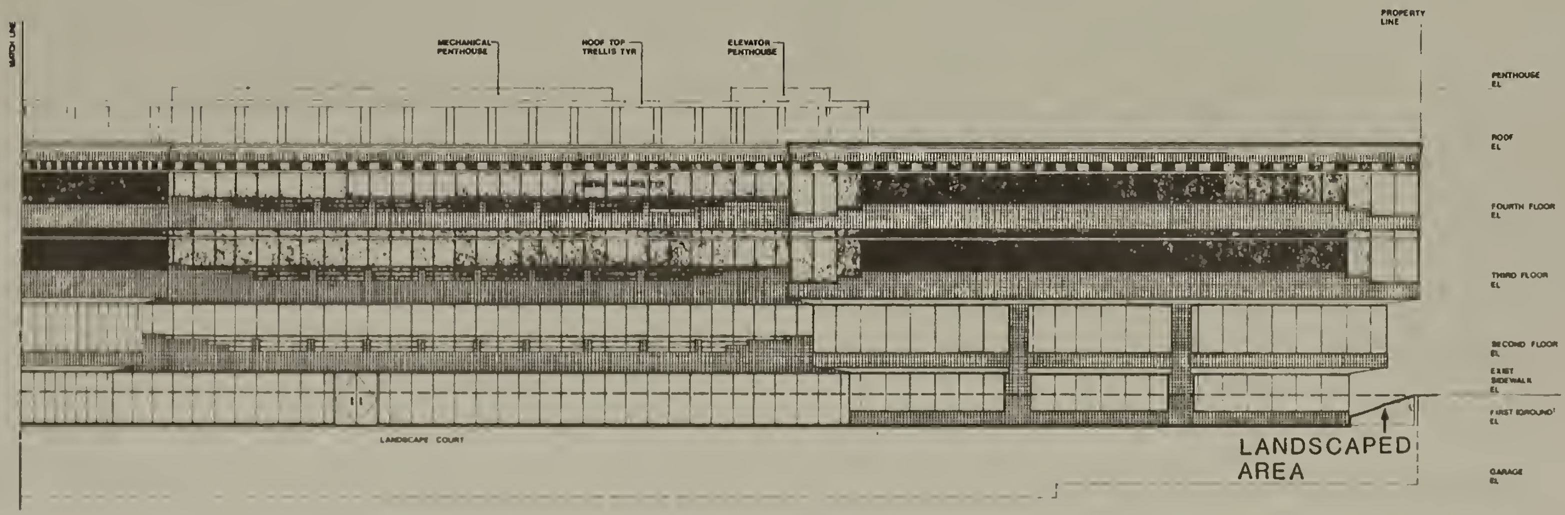
5



PARTIAL EAST ELEVATION (The Embarcadero)



NORTH ELEVATION (Union Street)



PARTIAL EAST ELEVATION (The Embarcadero)

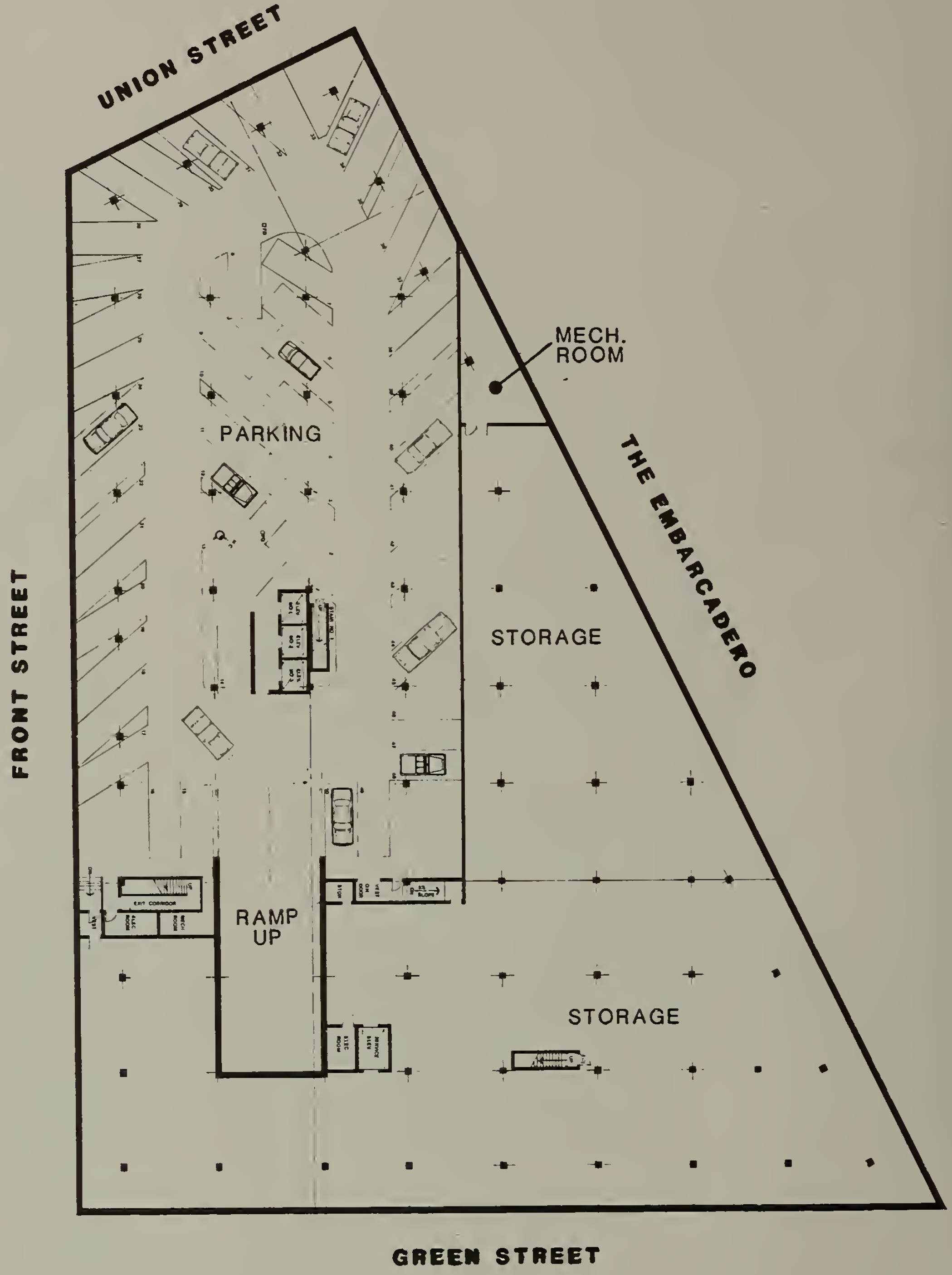
SOURCE: THE MONSELLE/BROWN PARTNERSHIP INC.

SCALE 0 5 10 20 30 50 FEET

Embarcadero Office Terraces

EAST AND NORTH BUILDING ELEVATIONS

6



SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

SCALE 0 20 40 80 FEET

Embarcadero Office Terraces

GARAGE LEVEL PLAN

7

With a self-park program, the basement parking area would accommodate 50 cars; with attendant parking, 125 cars could be parked on-site. It is not known at this time which parking option would be used.

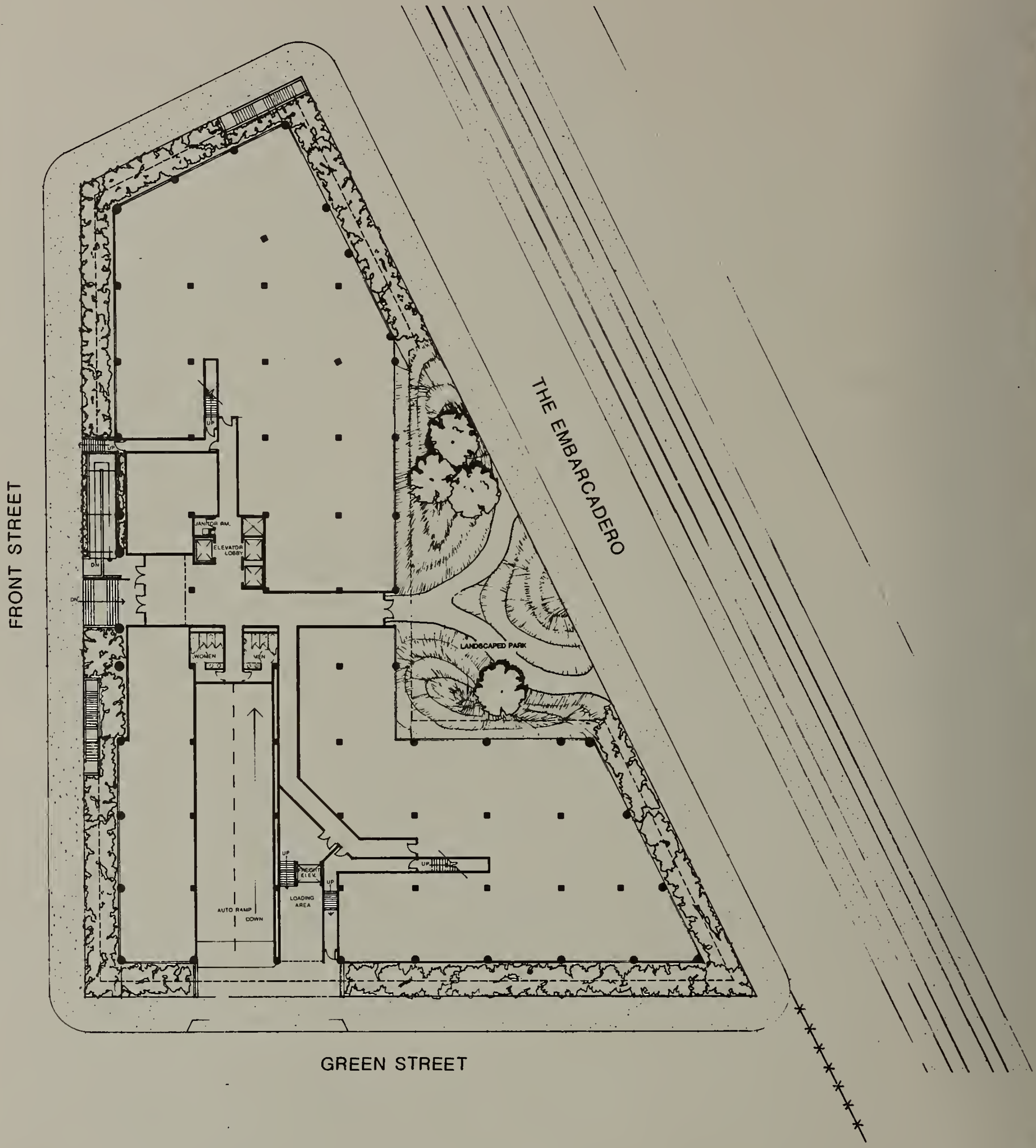
The ground level, planned primarily for office space, also would include a lobby, restaurant space, mechanical space, access to parking and the one loading dock proposed for the project (see Figure 8, page 18). The lobby would connect to a main entrance on Front Street with rear access to The Embarcadero via a garden court of approximately 5,500 square feet. The specific ground-floor location of the restaurant has not been designated at this time. Access to parking and loading facilities would be from Green Street. The structure would occupy about 40,000 square feet of the 46,200-square-foot project site.

The second, third and fourth floors are planned for large-floor office space including about 33,300 square feet on the second floor, 40,700 square feet on the third floor and 40,200 square feet on the fourth floor (see Figure 9, page 19). The office floors would feature a central elevator and service area with office space designed on a free module to allow varied placement of office partitions.

A publicly accessible garden court on the Bay side of the structure would provide a landscaped open space area linking the proposed project to The Embarcadero.

The main project entrance on Front Street would be a three-story brick archway. The facades would be of glazed brick red ceramic tile, bronze glass and dark metal trim. The two lower floors would be recessed approximately seven feet (see Figure 6, page 15). Recessed areas would be landscaped to provide a visual transition between adjacent interior spaces and the exterior landscaped areas (see Figure 6). Balconies along the upper floors of the building's Bay side would overlook the garden court and the Embarcadero roadway which is proposed for renovation by the City.

The project site contains a 304-space surface parking lot which would be removed and replaced with the proposed structure.



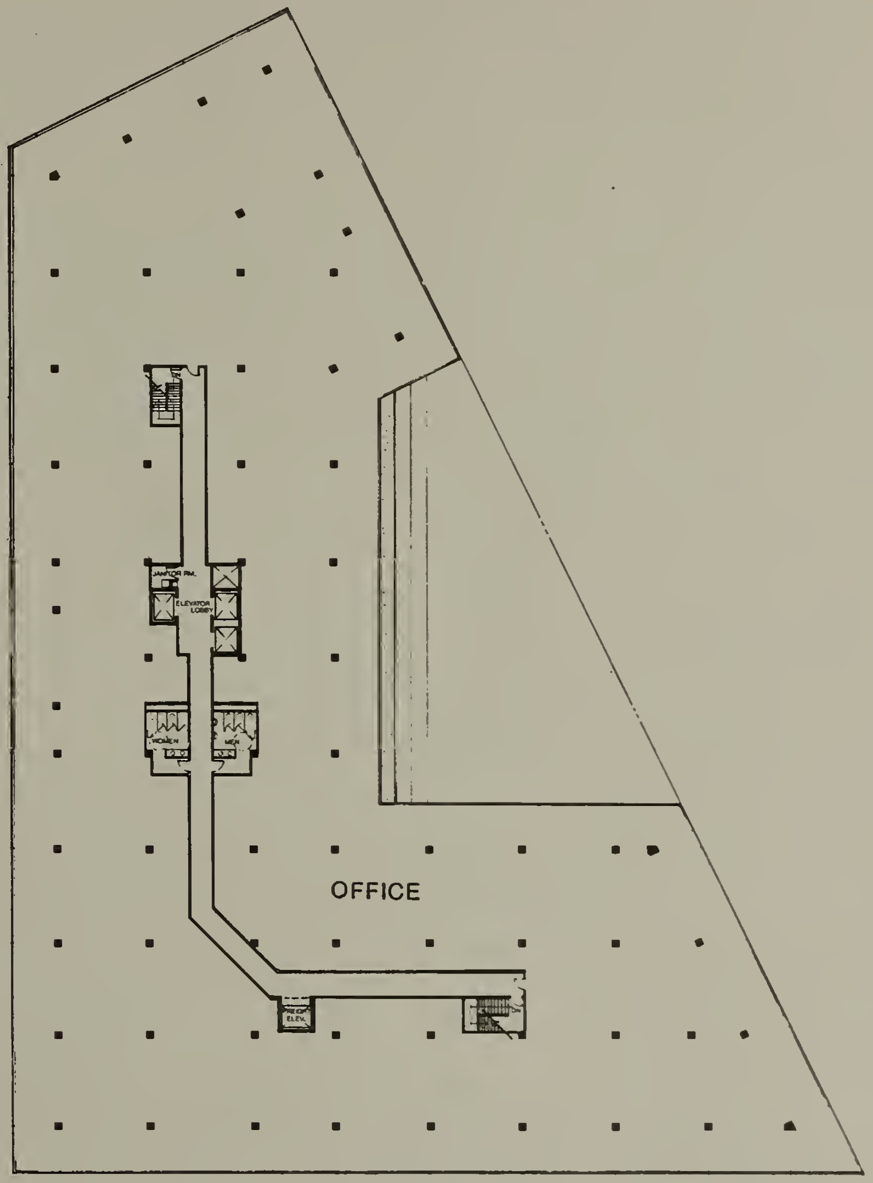
SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

SCALE 0 20 40 80 FEET

Embarcadero Office Terraces

FIRST FLOOR AND SITE PLAN

8



SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

SCALE 0 20 40 80 FEET

REPRESENTATIVE FLOOR PLAN: SECOND THROUGH FOURTH FLOORS

9

The architectural firm for the proposed project is Munselle/Brown Partnership, Inc. of San Francisco. The estimated construction cost of the project is $11,000,000 (in 1983 dollars). Assuming current market conditions, office space is expected to rent for an average of $35 per square foot per year.[1]

Upon approval, construction of the proposed project would occur over an 18-month period. Foundation excavation would require about two months; foundation construction, three months; building erection, four months; exterior finishing, three months and interior finishing, including electrical and mechanical work, six months. The duration of the activities is an approximation and some phases could overlap. Initial occupancy is expected to occur in mid-1985.

D. REQUIRED APPROVALS

Certification of this Environmental Impact Report by the City Planning Commission following public review and responses to comments is the first step in processing the proposed project. The project would require a variance for exception to the off-street parking requirement of the Planning Code. The number of parking spaces[2] and loading docks[3] required by the Code for the site would be 256 and 1, respectively. The proposed project would contain 50 below-grade parking spaces (206 less than the requirement), and one loading dock. With attendant parking, an additional 75 cars could be parked.

A variance may be granted pursuant to Section 305(c) of the San Francisco Planning Code by the Zoning Administrator if he establishes: that there are exceptional circumstances applying to the property; that enforcement of the Code would result in practical difficulty not created by the applicant; that a variance is necessary for the preservation and enjoyment of the property; that the granting of a variance would not be detrimental to the public welfare; and that the granting of a variance would be in harmony with the intent of the Planning Code and the Comprehensive Plan. The variance application would be the subject of a public hearing after certification of the Final EIR.

The proposed project would require a Certificate of Appropriateness from the City Planning Commission for development within the Northeastern Waterfront Historical District before the project sponsor may receive a building permit from the Port of San

Francisco. Section 1006 of the Planning Code requires a Certificate of Appropriateness for construction when a City permit is required in a historic district.

Because it would be on City property, the proposed project would require review of aesthetics and approval by the San Francisco Art Commission.[4] The site is managed by the San Francisco Port Commission in trust for the state. A ground lease for a term of 52[5] years was granted to the developer by the Port in August 1981 and approved by the Board of Supervisors in September 1981.[6] A building permit for the project would be obtained from the Port.

---

[1] Ted Brown, architect, Munselle/Brown Partnership, Inc., telephone conversation, February 10, 1983.

[2] Section 151 of the San Francisco Planning Code specifies off-street parking requirements as follows:

Office Use:	1 space for each 500 square feet of occupied floor area where the occupied floor area exceeds 5,000 square feet. (127,800 square feet/500 = 256 spaces)
Restaurant Use:	1 space for each 200 square feet of occupied floor area, where the occupied floor area exceeds 5,000 square feet. (Restaurant space for the proposed project would not exceed 5,000 square feet; thus no spaces are required for the restaurant portion of the project.)

Occupied floor area is defined in Section 102.9 of the Planning Code as the gross floor area minus certain structural components including non-accessory parking and loading spaces, exterior walls of the building, mechanical equipment, rest rooms, areas "off-limits" to customers in retail stores, and service and incidental storage space related to building activities.

[3] Loading dock guidelines adopted by San Francisco Planning Commission on January 21, 1982, described in Resolution No. 9286.

[4] San Francisco City Charter, Part II, Section 3.601.

[5] City and County of San Francisco, Port Commission, Resolution No. 81-63, August 12, 1981.

[6] San Francisco Board of Supervisors, Ordinance No. 480-81, File 65-81-9, September 9, 1981.

III. ENVIRONMENTAL SETTING

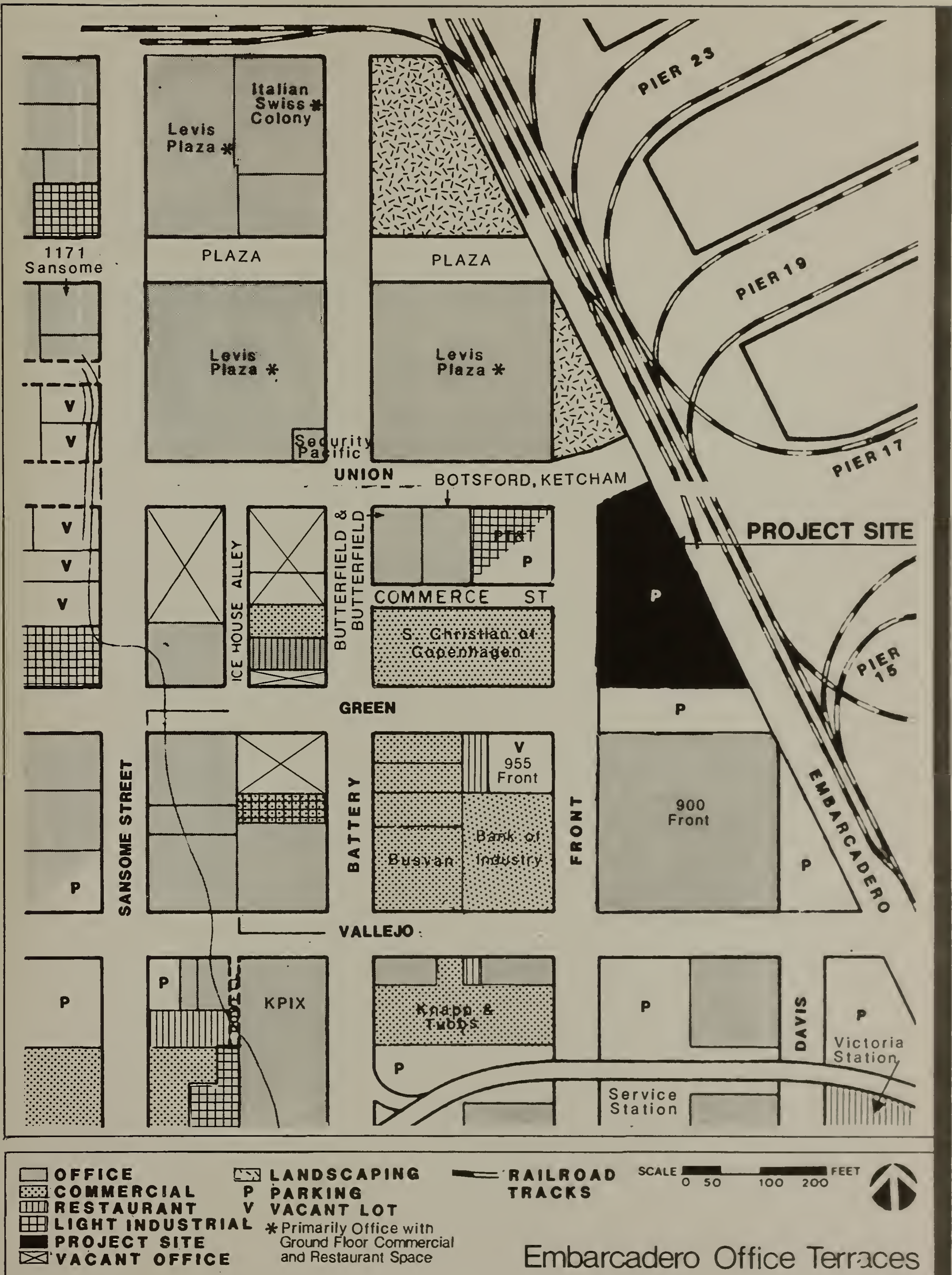
A. LAND USE AND ZONING

1. Land Use

The project site occupies part of a larger area known as the Base of Telegraph Hill. As the name suggests, the area extends along the waterfront from Broadway on the south to Bay Street on the north and lies between Telegraph Hill and The Embarcadero. South of this area are the Golden Gateway Redevelopment Project area and the Jackson Square Historic district; Fisherman's Wharf lies to the northwest.

The project site is currently used as a parking lot accommodating 304 vehicles, and is one of the few parcels in the project area which is neither developed nor landscaped (Figure 10, page 23). In the area of the site, warehousing and light industrial uses are being converted to office, showroom, and retail uses.

Immediately south of the site, occupying the entire block at Front and Vallejo Streets, is the three-story 900 Front Street building. This building was formerly occupied by Master Charge, but is currently vacant. Directly southwest of the site is the location of the proposed 955 Front office project currently under formal review (see Table 1, page 24); this site is now vacant. The S. Christian of Copenhagen warehouse and retail store occupy the portion of a two-story brick building which faces the west project property line. The rest of this building is occupied by professional offices. Pacific Telephone and Telegraph indoor parking facilities and warehouse are also adjacent to the site to the west. The area north and northwest of the site is developed as the three- to seven-story Levi's Plaza development which contains 800,000 square feet of office, restaurant and retail space in three blocks. The portion of Levi's Plaza directly north of the project site includes a landscaped park and plaza with paths and spaces for strolling, sitting and other outdoor activities.



Embarcadero Office Terraces

LAND USE **10**

TABLE I

OFFICE DEVELOPMENT IN THE BASE OF TELEGRAPH HILL AREA[1]

Projects Approved/Under Construction	Gross Office Square Feet
The Roundhouse (Bounded by Sansome, Lombard and The Embarcadero)	45,000
100 Broadway	13,000
1299 Sansome	41,000
SUBTOTAL	99,000
Projects Under Formal Review	
Embarcadero Terraces	139,000
Ice House Conversion (showroom to office)	209,000
1171 Sansome	30,000
955 Front at Green	50,000
SUBTOTAL	428,000
TOTAL	527,000

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[1] As of June 1, 1983; see Appendix F, page A-61.

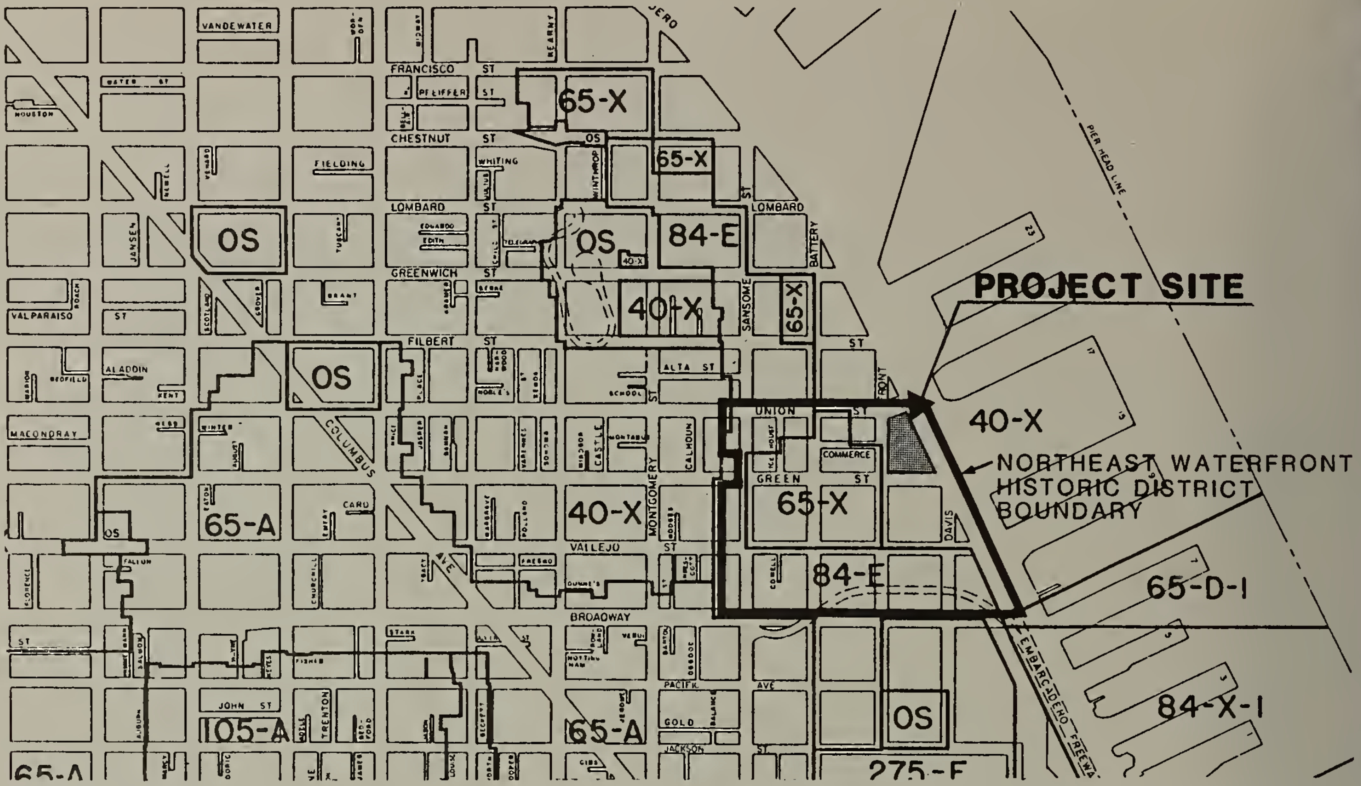
Source: Department of City Planning

The Broadway/Battery ramp to the Embarcadero Freeway is located two blocks south of the project site. The Belt Line Railroad, which provides limited freight service to the piers, has tracks immediately east of the site. The Embarcadero roadway, also to the east, is proposed by the City for future improvements which would convert it into a waterfront boulevard with provision for an exclusive median for the proposed "E" Embarcadero street car line. These improvements are being considered in the I-280 Transfer Concept Program study for which an AA/EIS/EIR is being prepared. Piers 15 and 17, across The Embarcadero from the site, are used for cargo handling and associated maritime activities.

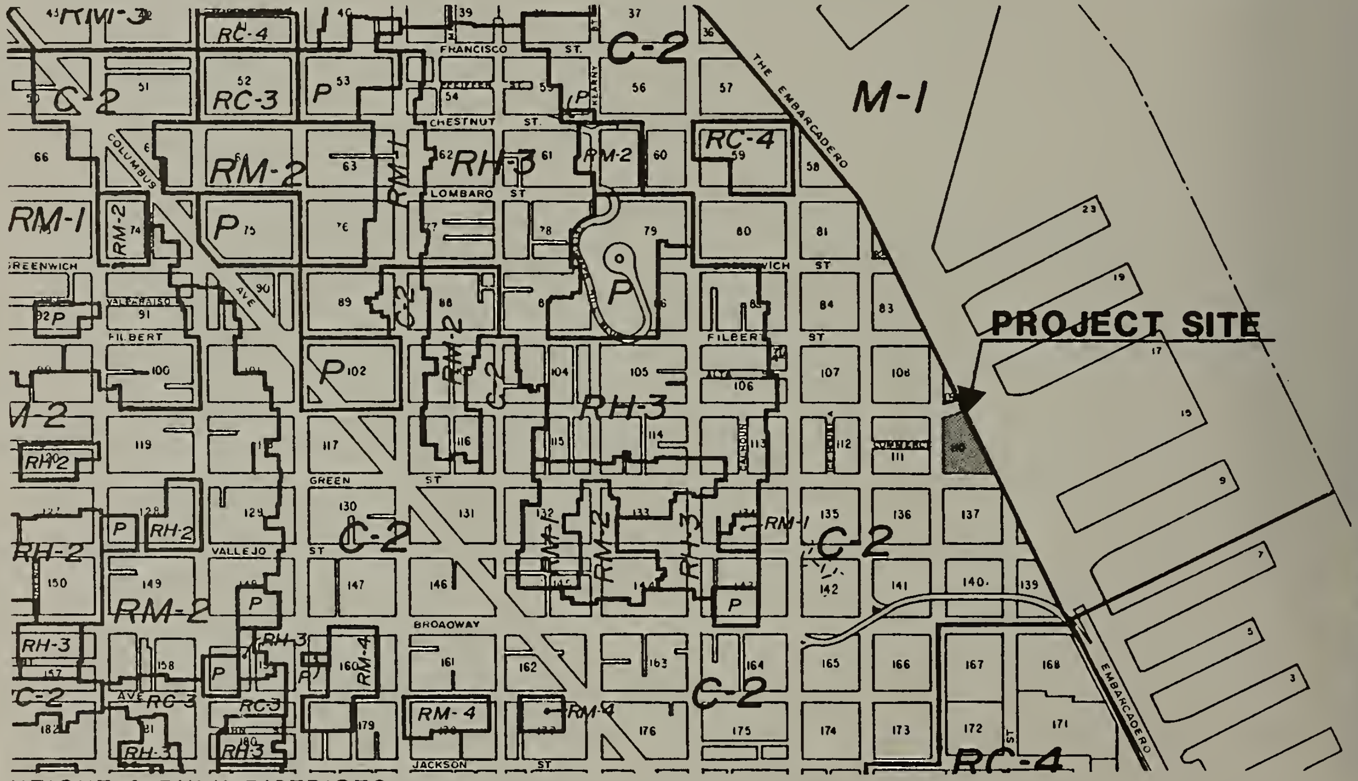
Two blocks west of the project site are the cliffs of Telegraph Hill. Residences border the Filbert and Greenwich steps and continue to the top of the hill. Telegraph Landing Condominiums, bounded by Montgomery, Chestnut, Sansome and Lombard Streets and the 101 Lombard Condominiums (now under construction), immediately south of Telegraph Landing, will include together about 202 luxury residential units within four blocks of the site.

2. Zoning and Plan Considerations

The proposed site is in a C-2, (Community Business) district where offices and commercial uses are principal permitted uses (see Figure 11, page 26). The site is within the Northern Waterfront Special Use District No. 3.[1] This Special Use District permits industrial and commercial operations directly relating to water-borne commerce or navigation and wholesale establishments within an enclosed building as principal permitted uses, which must be in conformance with the Northeastern Waterfront Plan. Development in the area is subject to the general provisions outlined in the City Planning Code for C-2 districts; the provisions may be superseded by the provisions of the Special Use District. The site is outside the permit jurisdiction of the State San Francisco Bay Conservation and Development Commission (BCDC). However, the Special Area Plan No. 1: San Francisco Waterfront, part of BCDC's San Francisco Bay Plan, recommends that the project area, Seawall Lots 311 through 324, be used for office, commercial and residential purposes, and parking. A planning document for the San Francisco Port Commission,



ZONING



HEIGHT & BULK DISTRICTS

SOURCE: SAN FRANCISCO PLANNING CODE

SCALE 0 400 800 1600 FEET

Embarcadero Office Terraces

ZONING/HEIGHT AND BULK DISTRICTS **11**

Maritime Strategy II (June 1979), states that the land use objective for the project site is commercial use. The northern waterfront area containing the project site has been designated as a historic district (see Figure 11, page 26).[2]

The maximum floor area ratio (FAR) allowed in the site's C-2 zoning designation is 3.6:1 (Section 124 of the Planning Code). This FAR, however, is superseded by a higher FAR allowed in the Northern Waterfront Special Use District No. 3 (Section 240.3 of the Planning Code) to permit more intensive development in the Special Use District. A 5:1 FAR is permitted in this Special Use District; thus, the allowable gross floor area of office and restaurant uses could be up to five times greater than the area of the lot, or 231,020 square feet. The height and bulk for the site is 40-X; structures within this district may not exceed 40 feet in height. Bulk limits do not apply for the site in this district.[3]

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[1] City and County of San Francisco, Planning Code, Section 240.3, 1979 Edition.

[2] Approved by City Planning Commission Resolution No. 9517, September 23, 1982 and by Board of Supervisors Ordinance No. 171-83, April 4, 1983. Effective on May 8, 1983.

[3] City and County of San Francisco, Planning Code, Section 260, 1979 Edition.

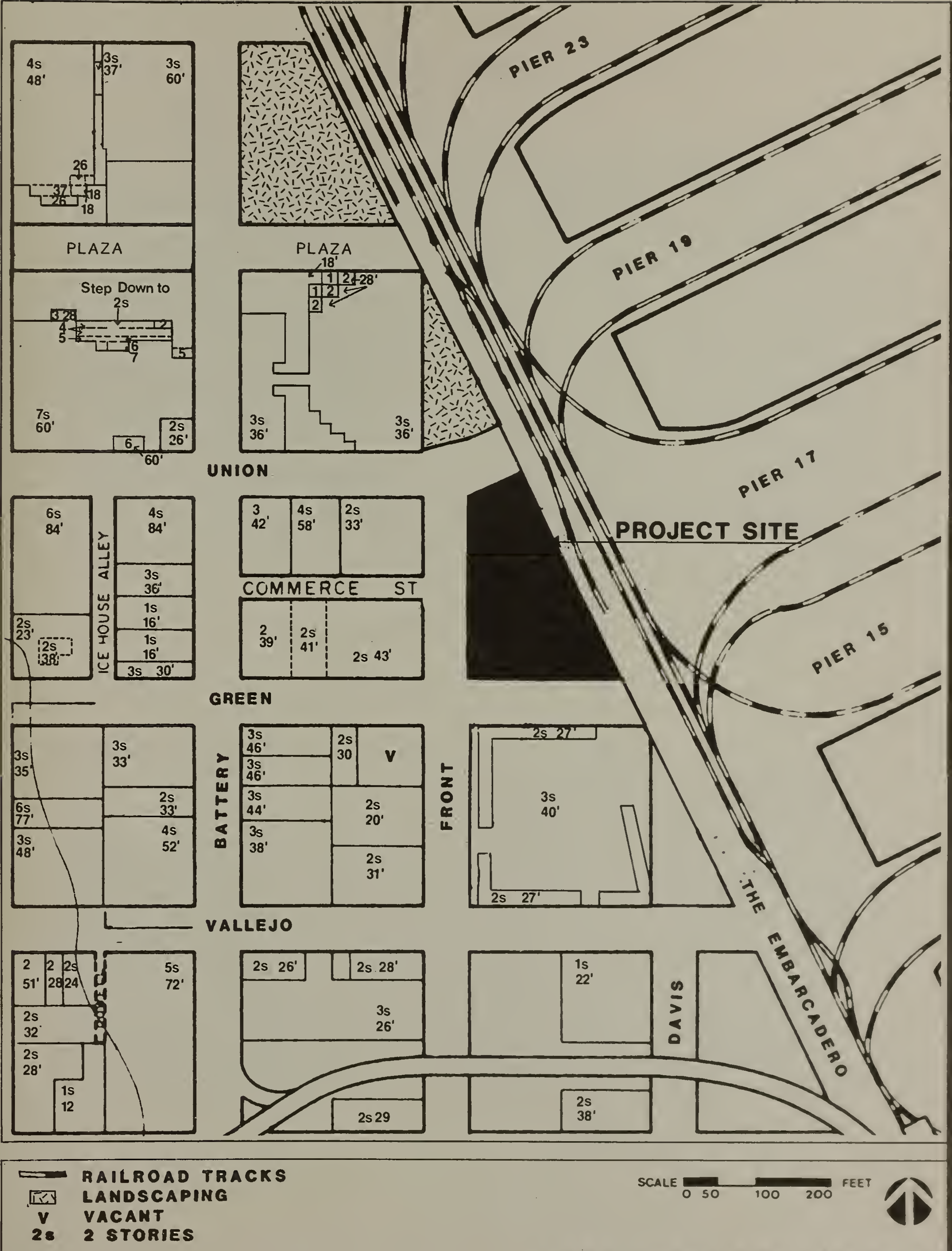
B. VISUAL QUALITY AND URBAN DESIGN

The Base of Telegraph Hill has been used primarily for warehouses since the mid-1800s. As port activities have declined in recent years, old warehouse buildings have been converted to office, restaurant and retail use. Some buildings have been demolished for new projects such as Levi's Plaza, a seven-block mixed-use development located immediately north of the site, and other land has been converted to surface parking lots, such as that on the project site (see Section III.A, page 23).

Streets once paved with granite cobbles have been resurfaced with asphalt paving. Portions of railroad spurs extending from the Belt Line tracks paralleling The Embarcadero are found throughout the project vicinity but are no longer used. Telephone and electric lines supported on wooden poles follow the grid pattern of the streets.

Existing exterior building facades are mostly of red brick, although there are smaller buildings with wooden or concrete surfaces. Doorways and windows are typically formed in semicircular or elliptical arches with the windows set back from the building facades. Examples include the Italian Swiss Colony Building located at Sansome and Greenwich Streets and the Ice House, located at the intersection of Sansome and Union Streets. Building forms are characteristically rectangular in shape; ornamentation is usually restrained. Building heights range from one to seven stories (Figure 12, page 29). Generally, the higher buildings are situated inland near Sansome Street and lower buildings are situated near the waterfront; building heights range from about 14 feet to 84 feet.

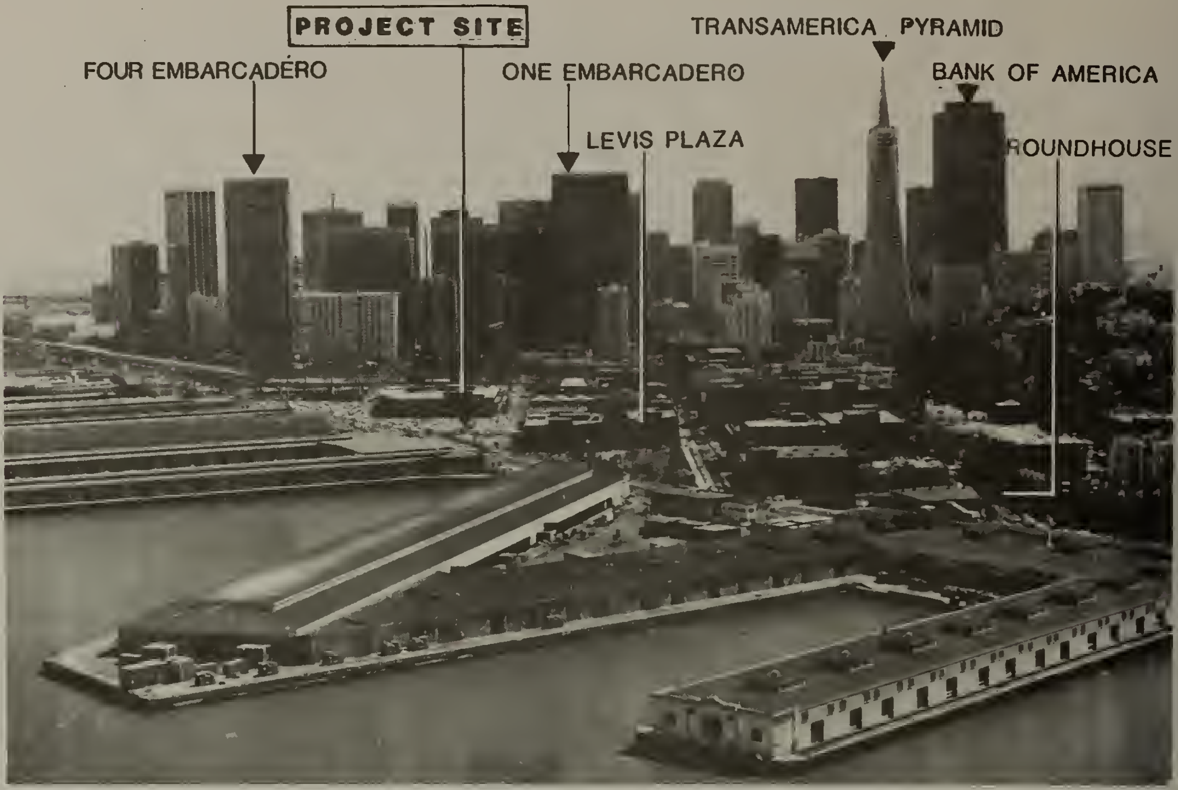
The site is highly visible to travelers along The Embarcadero. Throughout the project vicinity, Telegraph Hill, because of its proximity, mass, and height, inhibits distant views to the west. From the project site, Coit Tower on Telegraph Hill is prominent and the Transamerica Pyramid and Bank of America Building are among several Financial District structures seen in the skyline. The bulkhead buildings of Piers 9, 15, 19 and 23 across The Embarcadero, because of their size obstruct views to the Bay from the project area (Figures 13 and 14, pages 30 and 31 show the project area and the site). The arched entryways to the piers give visual emphasis to these structures and contribute to their architectural character. The City of San Francisco has proposed a waterfront boulevard in The Embarcadero right-of-way between Broadway and North Point Street[1] with



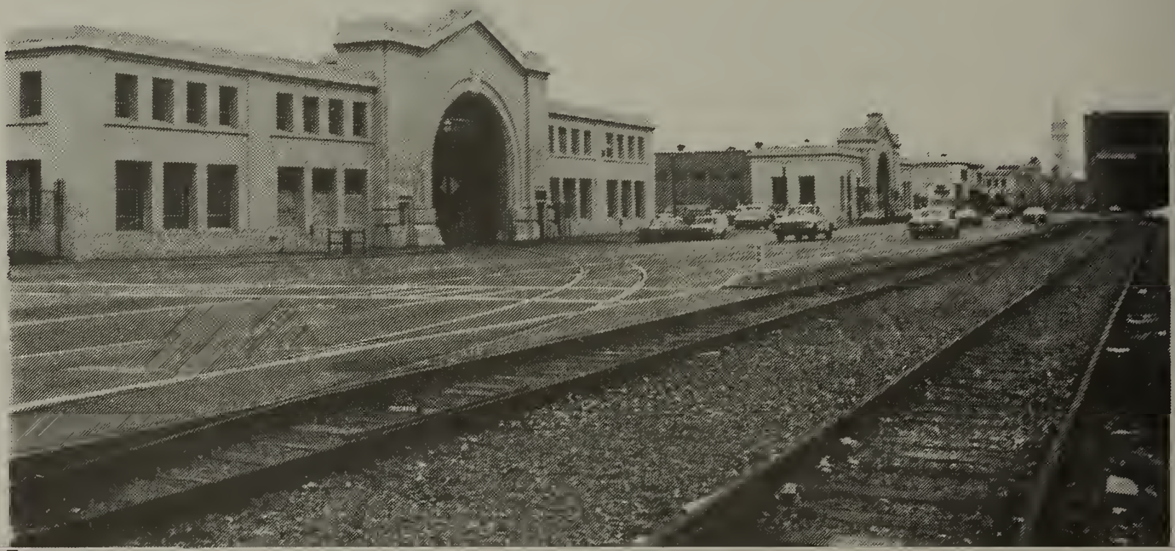
Embarcadero Office Terraces

BUILDING HEIGHTS IN PROJECT VICINITY

12



a AERIAL VIEW LOOKING SOUTH

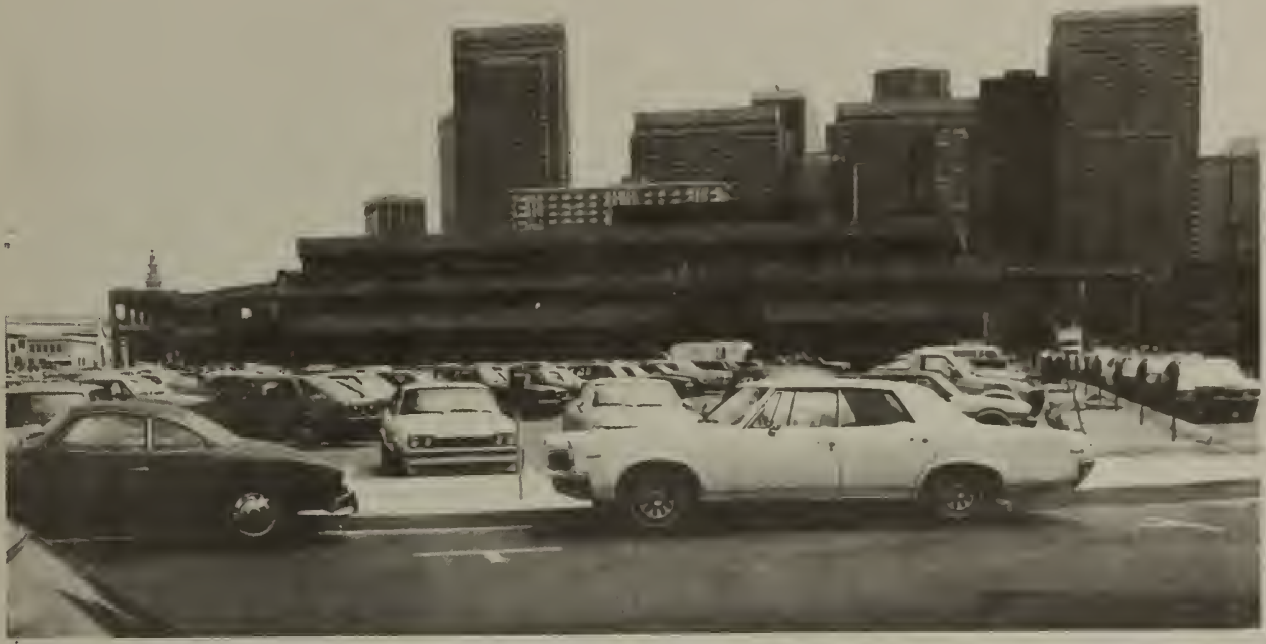


b PIER 15 BULKHEAD BUILDING

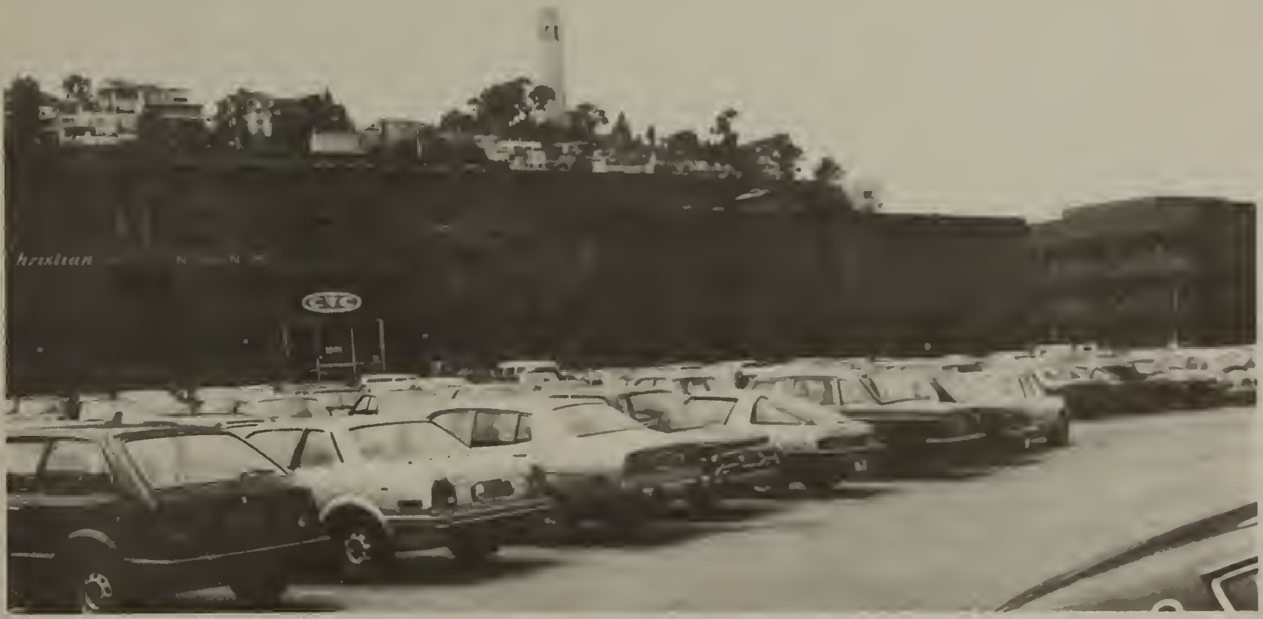
SOURCE: EIP

Embarcadero Office Terraces

PROJECT AREA PHOTOGRAPHS **13**



a PROJECT SITE (LOOKING SOUTH ACROSS UNION STREET).



b NORTHERN HALF OF PROJECT SITE (LOOKING NORTHWEST AT TELEGRAPH HILL).

SOURCE: EIP

Embarcadero Office Terraces

PROJECT SITE PHOTOGRAPHS **14**

improvements calling for wider sidewalks, truck parking lanes, moving traffic lanes, exclusive transit lanes, improved pedestrian access across The Embarcadero, a bicycle lane, and a landscaped parkway strip in front of all development on the inland side of the street.

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[1] City and County of San Francisco, Department of City Planning, Northeastern Waterfront Plan, adopted by Resolution 7643 of the City Planning Commission, January 19, 1977, p. 53.

C. HISTORIC AND CULTURAL RESOURCES[1]

In its natural state, Telegraph Hill was a windswept promontory overlooking a cove to the south. The area adjacent to the cove was selected for the site of a commerce-oriented town during Mexican authority because of the protected anchorage at Yerba Buena Cove. The Gold Rush necessitated expansion of the waterfront, and wharves were built out from or along the steep slopes of Telegraph Hill. In the early and mid-1850s the wharf and warehouse complex in the area developed rapidly. The base of the Hill was cut away and the foreshore filled for construction of substantial masonry warehouses and wharves to accommodate the big clipper ships launched for the lucrative California trade. The 1853 Coast Survey Chart indicates that Law's Wharf was once located near the intersection of Front and Union Streets directly northwest of the project site.

The first of San Francisco's two seawalls was begun in September 1867. One section ran along Front Street between Union and Vallejo Streets; filling of the project site occured after this date. A photographic panorama of the waterfront shows that much of the eastern half of the project area had not been filled by 1883. The project site lies to the west of Section 5 of the second San Francisco seawall, which was erected in 1885. The 1887 Sanborn Insurance Company map shows the subject parcel being used by the San Francisco Pine Lumber Company as an open storage area. A boatyard and coal shed existed on the northern third of the subject parcel during the same year.

Historic District Designation. The northern waterfront area containing the project site has been designated a historic district,[2] based on existing Gold Rush warehouses preserved from the 1906 fire and the waterfront industrial buildings from every decade (except the 1870s), preserved there, creating an architecturally historic network within the district. Many buildings of the post-Gold Rush era were constructed so that they contributed to the old waterfront ambience.

Within this historic district, the Landmarks Board reviews applications for demolition, new construction, alterations, or exterior changes visible from a public place or thoroughfare on the property through the Certificate of Appropriateness process. The Board then makes a recommendation to the Director of Planning or to the City Planning Commission.

Several structures within the immediate project area have been designated to have architectural merit. In a survey prepared in 1976 by the Department of City Planning,[3] the brick warehouse (S. Christian of Copenhagen) facing the project site was given a rating of 3. Two other structures on that block were each rated 2: the Butterfield and Butterfield Building and the Botsford, Ketcham Building, with frontage on Battery and Union Streets respectively (see Figure 10, page 23).

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[1] Archeo-tec, Consulting Archaeologist, "Assessment of Potential for Significant Cultural Resources, Embarcadero Terraces," prepared for EIP, July 8, 1982, included as Appendix B, page A-21 of this EIR.

[2] Approved by City Planning Commission Resolution No. 9517, September 23, 1982 and by Board of Supervisors Ordinance No. 171-83, April 4, 1983. Effective on May 8, 1983.

[3] DCP Rating refers to an architectural survey of all buildings in the City, conducted by the Department of City Planning in 1976. Those buildings considered to have architectural value were rated as to the degree of architectural value from a low of "0" to a high of "5." In terms of architectural value, buildings rated 3, 4 or 5 represent the best 2% of the City's entire building stock.

D. EMPLOYMENT, HOUSING AND FISCAL FACTORS

1. Employment

The project site presently contains a self-service parking lot which sustains no full-time on-site employment. The site is located several blocks to the north of the downtown office area of San Francisco. Office employment now represents more than one-half of all Bay Area jobs, and accounted for 60% of Bay Area and City employment growth during the 1970s.[1]

During the past three years (May 1980 through March 1983) the vacancy rate for office space in the downtown increased from as low as 0.1% to about 5.8.[2] The citywide office vacancy rate was 3.69% in July 1982.[3] Over the previous five years the office vacancy rate citywide fell dramatically, so the 1981-1982 trend represents a change in the market.[3] This change may in fact be a result of the nationwide recession that has restricted demand; it also reflects the additional supply of space constructed in recent years.

About 18.4 million square feet of office space are currently proposed or under construction but not occupied in San Francisco. Of this space, 4.1 million is under formal review, 5.7 million has been approved and an additional 9.1 million is either under construction or newly constructed. Table F-1 in Appendix F, page A-63, shows the specific projects which are included in these numbers.

2. Housing

There are about 322,000 housing units in San Francisco, according to the 1980 census. About two-thirds of the stock is rented and one third is owner-occupied. Housing production in the City (as measured by building permits issued) has heavily favored multi-family housing. Between 1978 and 1980, 84% to 87% of building permits were for multi-family housing and in 1981 that figure increased to 95%.[4]

The nature of the multi-family housing stock (including townhouses, condominiums and apartments) in the City is changing because of conversion of rental units to condominiums and conversion of residential hotels to other uses. Under the Subdivision Code, the City allows conversion of 200 units of rental housing to condominiums per year, about 40% of which have been estimated to be owner-occupied.[5] It is further estimated that from 1975 to 1980, approximately 3,700 residential hotel units were demolished or converted to commercial or tourist uses.[6]

Housing demand in San Francisco has heightened over the past decade. The number of households increased from 1970 to 1980 by 1.3%, despite a 5.6% decrease in total population. This reflects a decrease in the size of households in San Francisco from 2.34 persons to 2.19 persons, which is typical of many areas during this time.[7] Although the number of housing units in the City increased by 1.9% over this period, by 1980 the vacancy rate, which indicates the balance between housing supply and demand, remained low at 0.56% for owner-occupied housing and 2.68% for rental housing.[8]

The percentage of San Francisco's employed population which works in the City has decreased from more than 80% in 1970 to 75% in 1980.[9] This suggests that fewer people who are finding work in the City are also finding housing here. However, the number of San Francisco residents working in the Financial, Insurance and Real Estate (FIRE) sector increased during this period by more than 6,000. This represents about 33% of the total increase for jobs in this sector of the City.[9] The Department of City Planning projects that as many as 40% of office workers would desire to move to San Francisco upon finding work in the City.

The average market value of a single-family house in the Bay Area was $144,100 in 1982; the 1982 average in San Francisco was $148,200. San Francisco experienced the greatest increase in average market value of all Bay Area cities over the past five years.[10] In 1980 the median contract rent was $267, which in 1982 dollars would amount to more than $300.[11]

The expansion of downtown office space is one of the main sources of pressure on San Francisco's housing demand. There are also regional housing impacts. There were just over two million housing units in the nine-county Bay Area in 1980. About one third of the units are in the East Bay (Alameda and Contra Costa counties), about one third on the Peninsula (San Mateo and Santa Clara counties) about 16% percent in San Francisco, 10% in the North Bay (Marin and Sonoma counties) and 6% in Solano and Napa counties.[12] Regionally, single-family permits declined in 1979, 1980 and 1981. Alameda, Contra

Costa, San Francisco, San Mateo and Sonoma county single-family permit issuances rose from 1978 to 1979, but then declined in 1980. Regional multi-family rental unit permits have declined every year between 1977 and 1981. Conversely, condominium permits increased between 1977 and 1980 and then decreased in 1981.[13]

3. Fiscal

The project is located on land controlled by the Port of San Francisco. Because it is public land, a possessory interest fee is paid rather than a property tax, although this fee is paid at the same date as a property tax. The current assessed value of the project site (Seawall Lot 321) is $165,700.[14] At the 1982-83 tax rate of $1.17 per 1% of assessed value, the site generates $1,940 in possessory interest fee revenues.[15] About $1,655 of this amount accrues to the City and County of San Francisco. The parking use on the site generated about $41,040 in parking taxes paid to the City in 1982.[16]

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[1] Association of Bay Area Governments (ABAG) and the Bay Area Council, San Francisco Bay Area Economic Profile, December 1979, pages 37-48.

[2] 1980 vacancy rate reported in 201 Spear Street Office Building FEIR, certified May 20, 1982. 1983 vacancy rate obtained from Coldwell Banker, Downtown San Francisco Office Market Review: First Quarter 1983. The Coldwell Banker data (for both 1980 and 1983) provides downtown office vacancy rates only.

[3] BOMA of San Francisco, The BOMA Newsletter, July 8, 1982. This source provides citywide office vacancy rates.

[4] ABAG, San Francisco Bay Area Housing Activity Report, No. 4, May 1982, page 21.

[5] San Francisco Department of City Planning, Condominium Research, Preliminary Progress Report, December 1981.

[6] San Francisco Department of City Planning, A Study of the Conversion and Demolition of Residential Hotel Units, December 1980, page 17.

[7] Department of City Planning, Statistical Update on Citywide Office Development, May 1, 1981.

[8] U.S. Bureau of the Census, 1980 Census Information, File STF 1-A, Report #4, March 1982, Tables 25 and 26.

[9] U.S. Bureau of the Census, Population Census 1970 and 1980, and County Business Patterns 1970 and 1980.

[10] Real Estate Research Council of Northern California, Northern California Real Estate Report, Vol. 33, No. 1, April 1981. The Federal Home Loan Organization reports an average of $127,000 for purchase of housing (new or used, single or multi-family) in the third quarter of 1981. San Francisco Examiner, November 15, 1981.

[11] City and County of San Francisco, 1980 Census Information, File STF1-A, Report #4-Housing, Table 44, March 1982. Escalation to 1982 dollars based on a 15.4% increase in the Consumer Price Index.

[12] ABAG, Census '80 Data Profile: 1980 Detailed Regional Housing Profiles, Berkeley, April 1980.

[13] ABAG, San Francisco Bay Area Housing Activity Report, No. 3, May 1981 and No. 4, May 1982.

[14] Richard Stanske, Assessor, City of San Francisco, telephone conversation, July 28, 1982.

[15] Of the total tax, $1,657 represents the maximum allowable under Proposition 13 for general governmental expenditures, and $283 was levied to finance bond obligations previously approved by the electorate (1% plus 0.17% of assessed valuation).

[16] Robert Orgain, Metropolitan Parking Corporation, telephone conversation, February 16, 1982.

E. TRANSPORTATION, CIRCULATION AND PARKING

The project site is bounded by The Embarcadero roadway and Union, Front and Green Streets (Figure 15, page 40). The Embarcadero is a four-lane street separated from the site by railroad tracks. Green Street currently serves only as access to the existing surface parking lot on the site. Front is a two-lane street extending south from Union and does not link with The Embarcadero. Union Street is currently closed at The Embarcadero, but would be extended (and realigned) by the City to link with The Embarcadero as part of the proposed redesign of the Embarcadero roadway.

Primary intra-city access to/from the project area would occur on The Embarcadero, Broadway, and Sansome and Battery Streets. Broadway and The Embarcadero are designated "Primary Vehicular Streets"[1] in the Transportation Element of the City's Comprehensive Plan. Sansome, Battery and The Embarcadero are also designated "Transit Preferential Streets" in the Downtown Transportation Plan.[2]

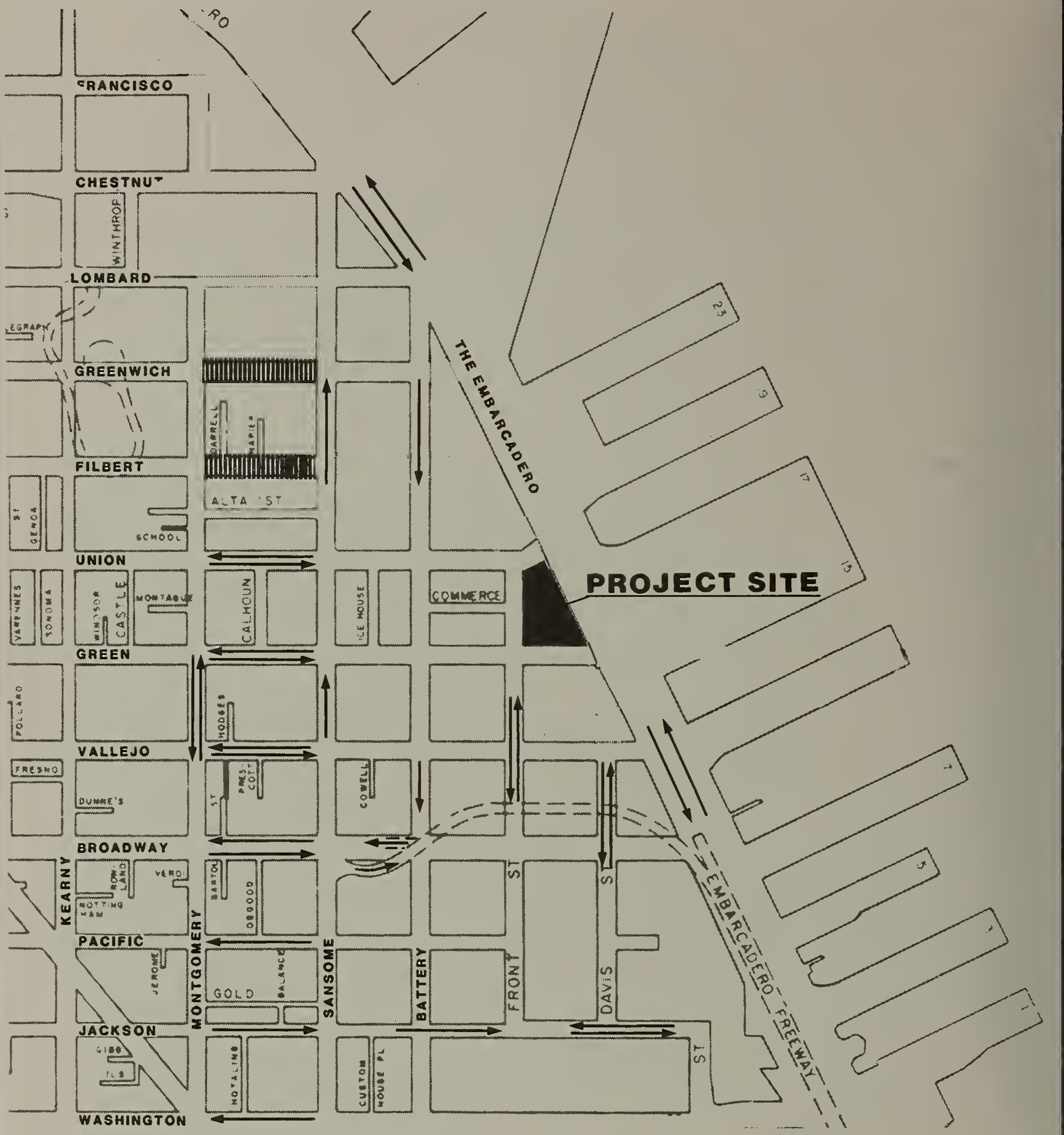
Regional access to/from the East Bay and Peninsula is available via The Embarcadero Freeway, with on-ramps at Broadway/Sansome and off-ramps at Broadway/Battery. Traffic to/from the North Bay generally travels along Bay Street and The Embarcadero.

Two Muni routes operate within walking distance (approximately one-quarter mile or two to three blocks) of the site. The 32 Embarcadero links the site with the south of Market, downtown and Aquatic Park areas. The 42 Downtown Loop circulates within the entire downtown area.

Golden Gate Transit's transbay financial district routes operate on Sansome and Battery Streets in the project area.

Muni and Golden Gate Transit services in the projected area are shown in Figure 19, Section IV.F., page 86.

Pedestrian activity adjacent to the project site is primarily limited to commuters walking to and from the surface parking lot on the site and the parking garage immediately south of the site. Pedestrian flows are also concentrated crossing Battery Street. Bus stops for Muni line 42 and Golden Gate Transit routes are located on the west side of Battery Street (for service toward the downtown) and the east side of Sansome Street (for service toward The Embarcadero and North Bay).



SOURCE: EIP

▥ **STAIRS**

SCALE 0 250 500 1000 FEET

Embarcadero Office Terraces

EXISTING STREET NETWORK

15

In the project area, Lombard Street (Sansome to Montgomery), Green Street (Sansome to Front), Jackson Street (Front to Drumm), Sansome and Battery Streets (south of Lombard) and Front Street (Green to Jackson) have been designated Bicycle Routes in the Transportation Element of the City's Comprehensive Plan. None of these streets have been striped with bicycle lanes.

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[1] Primary Vehicular Street is defined as a cross-town thoroughfare whose primary function is to link districts within the City and to distribute traffic from and to the freeways, a route generally of city-wide significance; Transportation Element of the CCSF Comprehensive Plan.

[2] Transit Preferential Street is defined as an important street for transit operations where interference with transit vehicles by other traffic should be minimized; Transportation Element of the CCSF Comprehensive Plan.

F. AIR QUALITY AND CLIMATE

1. Air Quality

San Francisco's persistent summer winds and upwind position with respect to major pollutant sources continue to give it what may be the cleanest air in the Bay Area. Despite these advantages, there are periods, usually in fall and winter, when the air becomes stagnant. At these times the entire Bay Area has poor air quality, as shown in Appendix H, Table H-1, page A-76. In 1980, state and federal standards for suspended particulates were exceeded in San Francisco; in 1981 only the Sstate standard for total suspended particulates (TSP) was violated. In 1980 and 1981 other measured pollutants all met the standards.[1,2] In 1982, one violation of the eight-hour average federal CO standard and three violations of the state TSP standard were recorded.

While San Francisco's air quality is better than in most locations in the Bay Area, State and federal standards are not uniformly met in the Bay Area (see Appendix H, Table H-1, page A-76). This resulted in development of the 1979 Bay Area Air Quality Plan, a part of the Environmental Management Plan (EMP) prepared by the Association of Bay Area Governments (ABAG) and other governmental agencies.[3] After modification, this plan has been incorporated into the State Implementation Plan, and is the current plan for air quality in the Bay Area. The Bay Area Air Quality Plan contains a comprehensive strategy for the long term attainment and maintenance of the air quality standards. Included are measures to reduce emissions from stationary sources and automobiles, and transportation controls. The air quality problems addressed in the Bay Area Air Quality Plan are photochemical oxidants, carbon monoxide and suspended particulates. The Bay Area Air Quality Plan was recently updated in the 1982 Bay Area Air Quality Plan which contains measures designed to meet federal carbon monoxide and ozone standards by 1987.[4]

2. Climate

The climate of San Francisco is dominated by the sea breezes characteristic of marine climates. Because of this steady stream of marine air, there are few extremes of hot and cold. Temperatures exceed 90°F on an average of once a year and drop below freezing less than once a year. The warmest month is September, with an average daily maximum of 69 degrees; the coolest is January, with an average daily maximum of 56 degrees. Winds in San Francisco are generally from a westerly direction and are persistent from May to August. During the rainy season (October to April), however, the strongest winds flow from the south, as well as from the west and northwest.

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[1] Bay Area Air Quality Management District, Air Currents, Vol. 24, No. 3, March 1981.

[2] Ibid., Vol. 25, No. 2, March 1982.

[3] Association of Bay Area Governments, 1979 Bay Area Air Quality Plan, Berkeley, California, January 1979.

[4] Association of Bay Area Governments, 1982 Bay Area Air Quality Plan, Berkeley, California, 1982.

G. GEOLOGY, HYDROLOGY AND SEISMICITY

The site is approximately level at elevation 0 feet, San Francisco Datum (SFD).[1,2] According to the geologic map of San Francisco, the site is underlain by artificial fill, Bay Mud and fractured Franciscan shale[3] and sandstone bedrock at about -92 feet SFD.[4]

Test boring logs of the property indicate the fill is 13 to 40 feet thick and overlies 25 to 30 feet of Upper Bay Mud (soft silt and clay).[5] The Bay Mud is underlain by five to 35 feet of medium dense to dense sand and firm clay. The upper surface of the weathered and fractured shale and sandstone bedrock was encountered between -58 and -110 feet SFD. Groundwater was encountered at -7 feet SFD and showed no tidal fluctuation.[6]

There is no surface water at the site. The property is nearly impervious, covered by the existing asphalt parking lot.

There are no active faults on the site.[4] There are four major fault zones in the San Francisco Bay Area capable of causing strong ground motion at the proposed project site. The San Andreas and Seal Cove faults are located off the Pacific shore nine miles and 14 miles, respectively, from the project site. The Hayward and Calaveras faults are ten and 20 miles east of the site.[7] Each of these systems is considered active and is capable of generating a major earthquake (greater than magnitude 7 on the Richter scale)[8] during the projected useful lifetime of any structure at this site (at least 50 years). Ground settlement and lateral spreading occured within three blocks southeast of the site during the 1906 San Francisco earthquake.[9]

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[1] San Francisco Datum is approximately 8.6 feet above mean sea level.

[2] Site visit by EIP geologist, G.J. Burwasser, June 18, 1982.

[3] Franciscan rocks are typical of the northern California Coast Ranges and underlie the hills of San Francisco. They consist of a mixture of dark-colored muddy sediments, red, green and brown cherts and lava flows of black basalt, all materials laid down on the floor of the Pacific Ocean about 100 million years ago. Cherts are rocks formed by deposits of silica containing microorganisms, which are transformed into hard, waxy or porcelain-like rocks. See Roadside Geology of Northern California, David D. Alt and Donald H. Hyndman, Mountain Press Publishing Company, Missoula, Montana, 1975. Also known as Franciscan Formation or Franciscan Assemblage. Office of Environmental Review, Standard Definitions, San Francisco, California, November 15, 1979 (OER).

[4] J. Schlocker, Geology of San Francisco North Quadrangle, California, U.S. Geological Survey, Prof. Paper 782, U.S. Government Printing Office, Washington, D.C., 1974, plate I (scale 1:24,000), page 88, Table 2, pages 83, 84, 66, 97, 91, 99.

[5] Bay Muds: Sediments in San Francisco Bay that consist largely of very fine soil particles existing in the presence of much water. They are loosely packed and therefore consolidate or compress easily. Office of Environmental Review, Standard Definitions, San Francisco, California, November 15, 1979 (OER).

[6] R.W. Rudolph (C.E. 32136) and H.T. Taylor (C.E. 8787), Harding -Lawson Associates, Soil Investigation, Embarcadero Terraces, The Embarcadero and Green Street, San Francisco, California, November 19, 1981, pages 5, 6, plate I.

[7] California Division of Mines and Geology, Fault Map of California, Data Map Series No. 1, 1975.

[8] Richter scale: a logarithmic scale developed in 1935 by Charles Richter to measure earthquake magnitude by the energy released, as opposed to earthquake intensity as determined by effects on people, structures and earth materials.

[9] T.L. Youd and S.N. Hoose, Historic Ground Failures in Northern California Triggered by Earthquakes, U.S. Geological Survey Professional Paper 993, Washington, D.C. 1978, page 125 and plate 3.

IV. ENVIRONMENTAL IMPACTS

A. ISSUES NOT ADDRESSED

An Initial Study (Appendix A, page A-1) was prepared for the proposed Embarcadero Office Terraces Building to identify potential environmental effects of the project. The determination that an Environmental Impact Report (EIR) was required was made and published with the Initial Study on August 6, 1982.

Potential environmental impacts determined to be insignificant, and therefore not addressed in this EIR, include: relocation (the project would not displace residents, businesses or people from the site); odors or burning of materials; utilities and public services (effects due to the project itself - potential cumulative impacts are discussed on page 117 of this EIR); biology; water; and hazards.

Not all issues covered in this EIR are physical environmental impacts as defined by the California Environmental Quality Act (CEQA); these have been included as additional information for the decision makers.

B. LAND USE AND ZONING

The proposed project would increase the density of uses on the site. The existing parking lot would be replaced with the proposed 40-foot building containing approximately 189,000 gross square feet. Office space totalling 139,000 gross square feet would be the major use in the project. Parking for 50 cars would be provided in a below grade parking garage. (See Section IV.F. Transportation, page 78 for impacts of reduction in on-site parking.) There would be 3,000 square feet of restaurant space located on the ground floor. The proposed project would cover about 87% of the ground area of the site. The remainder would include landscaping around the perimeter of the lot and a small garden court located on the east side of the proposed office building adjoining the Embarcadero roadway.

The proposed Embarcadero Terraces is part of a trend toward development of offices in the Base of Telegraph Hill area. Department of City Planning records indicate that as of June 1, 1983, three projects totalling 99,000 gross square feet of office space were recently approved or under construction in the base of Telegraph Hill area and four projects (including the proposed project) are under formal review (see Table 1, page 24 and Appendix F, page A-61). Cumulative transportation impacts associated with the proposed project and the Base of Telegraph Hill area are addressed in Section IV.F., Transportation, page 78.

The proposed project would conform to existing Planning Code requirements for the site regarding height and floor area ratio (FAR). The proposed project would contain about 142,000 gross square feet of office and restaurant space with an FAR of 3.0:1. An FAR of 5:1 is permitted for the site. The project would require a variance in order to allow 50 off-street parking spaces instead of the 256 spaces that are required for the site (see Section II.D., Required Approvals, page 20).

The Northeastern Waterfront Plan[1] contains general objectives and policies to be applied to the entire waterfront, and more specific policies for the Base of Telegraph Hill area. Land use policies adopted for the Base of Telegraph Hill area relevant to the project include:

> Objective 3: "To develop a diversity of additional activities which would strengthen the existing predominant uses in the Base of Telegraph Hill area and activities which

would expand the period of use, but of an intensity which would provide a relief from the adjacent downtown and Fisherman's Wharf areas."

Objective 3 - Policy 1: ". . . encourage development of uses which would strengthen the area's predominant uses of professional and general offices and design-related activities."

Objective 3 - Policy 3: "Encourage the development of a limited amount of uses such as shops, restaurants, entertainment and hotels which generate activity during evenings and weekends, but not of such an intensity or concentration as to create a major recreation or entertainment center."

Objective 3 - Policy 4: "Develop the area to a lesser intensity of activity than the adjacent downtown and Fisherman's Wharf areas in order to provide a relief in intensity from those areas."

Objective 3 - Policy 6: "Encourage the provision of landscaping and publicly accessible open space in new development in the Base of Telegraph Hill area."

The project would be responsive to the above policies.

Objective 3 - Policy 5: "Minimize the intensity of automobile activity and discourage or prohibit uses which rely heavily on the automobile for their success, generate automobile traffic, and require large amounts of parking. Strictly limit parking developed with new uses."

The proposed project would generally increase transportation impacts (i.e. impacts on the street system and parking) in the project area by removal of a 304-space surface parking lot.[2] However, Policy 5 also limits the parking developed within new uses. Embarcardero Terraces would respond to this aspect of the Policy. The project would provide 50 parking spaces, 254 less than are currently on the site.

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[1] San Francisco Department of City Planning, Northeastern Waterfront Plan, adopted by the City Planning Commission, January 17, 1977.

[2] For a discussion of project-related transportation impacts, see Section IV.F., page 78.

C. VISUAL QUALITY AND URBAN DESIGN

The Urban Design Plan Element of the Comprehensive Plan of the City of San Francisco,[1] sets out principles and policies for the guidance and design of new major development. The Northeastern Waterfront Plan also contains general objectives and policies to be applied to the entire waterfront and specific policies for the Base of Telegraph Hill area to retain existing maritime-related activities, preserve historic buldings, strengthen existing land uses, develop a balanced transportation system and achieve neighborhood compatibility in new construction.[2] There are also regulatory proposals contained in the study document, Guiding Downtown Development,[3] to which the project may be compared regarding visual quality and urban design. Policies relevant to the proposed project which are contained in the Urban Design Plan, the Northeastern Waterfront Plan and Guiding Downtown Development, are set forth below.

Objectives and policies of the Urban Design Plan, Northeastern Waterfront Plan and Guiding Downtown Development overlap. However, owing to the visual prominence of the project site, the provisions of all three documents appropriate to the project are discussed. For brevity, the proposed project's relation to the provisions of the Northeastern Waterfront Plan and Guiding Downtown Development (Tables 3 and 4, pages 55 through 59), are cross-referenced to the discussion under similar provisions of the Urban Design Plan (Table 2, pages 51 through 54). The proposed project would generally respond to the provisions of the Urban Design Plan, Northeastern Waterfront Plan and Guiding Downtown Development. Principally, the structure would be compatible in height, scale and mass with other buildings in the project area (photomontages, Figures 16, 17 and 18, pages 61, 62 and 63). The building would be surfaced with brick red ceramic tile, similar in color to other brick and tile-surfaced structures in the Base of Telegraph Hill area. The proposed structure would reflect the roughly trapezoidal shape of the project site. The portion of the site fronting The Embarcadero would contain a garden court consisting of trees, shrubs and groundcover extending to the building entry, intended to complement street trees of other recently completed projects in the area. The arched, brick entryway on Front Street would reflect the arched windows and entryways of the S. Christian of Copenhagen building and elements of other structures in the project area. The proposed structure would not obstruct views to the waterfront from Telegraph Hill.

TABLE 2

RELATIONSHIP OF THE PROPOSED PROJECT TO THE URBAN DESIGN PLAN

Urban Design Plan[1]	Proposed Project
Objective I - City Pattern	
Policy I: Recognize and protect major views in the City, with particular attention to those of open space and water (page 10).	The proposed structure would be 40 feet above street level. The project would not be expected to obstruct views toward pier structures and the project area except from the second and third floors of the north face of the 900 Front Street building directly south of the proposed project and the S. Christian of Copenhagen building facing Front Street, west of the proposed project.
Policy 3: Recognize that buildings, when seen together, produce a total effect that characterizes the city and its districts (page 10).	The scale and mass of the proposed building would be in keeping with the scale and mass of other buildings in the project vicinity. The project would be an infilling of land where no building currently exists, utilizing one of the few remaining undeveloped parcels of land in the Northeastern Waterfront area.

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[1] San Francisco Department of City Planning, Urban Design Plan, adopted by Resolution 6745 of the San Francisco City Planning Commission, August 26, 1971.

TABLE 2
(continued)

Urban Design Plan	Proposed Project
Policy 4: Protect and promote large-scale landscaping and open space that define districts and topography (page 10). Policy 5: Emphasize the special nature of each district through distinctive landscaping and other features (page 11).	City plans for improvement of the Embarcadero roadway include realignment and reconstruction; providing widened sidewalks and bus stops; a new streetcar line with pedestrian connections to Market Street, other Muni lines, and BART; and street trees and surface landscaping. That portion of the project site fronting The Embarcadero would contain a garden court containing trees, shrubs, groundcover and walkways extending from The Embarcadero to the building's entry opposite The Embarcadero (Figure 8, page 18). This open space area would link the project to The Embarcadero's improved landscaping at such time as the latter is implemented. Street trees would extend along the sidewalk of The Embarcadero providing visual continuity with the landscaped open spaces of Levi's Plaza north of the project site.
Policy 6: Respect the character of older development nearby in the design of new buildings (page 25). Objective 3 - Major New Development Policy 1: Promote harmony in the visual relationships and transitions between new and older buildings (page 36).	The building would be similar in height to other three-and four-story structures in the project area. The building would be surfaced with brick red ceramic tile, similar to other brick and tile-surfaced buildings in the area. Metal trim along the roof edge would be reddish-brown, complementing the ceramic tile color. The entry on Front Street would be through a two-story brick archway, which would repeat the arched window pattern of the 1906 S. Christian of Copenhagen building opposite the site on the northwest corner of Green and Front Streets. The building's Front Street entrance would line up with the axis of Commerce Street.

TABLE 2
(continued)

Urban Design Plan	Proposed Project
Policy 2: Avoid extreme contrasts in color, shape, and other characteristics which will cause new buildings to stand out in excess of their public importance (page 36).	The proposed structure would reflect the roughly trapezoidal configuration of the project site (Figure 8, page 18). The lower two floors would be set back on all sides to provide a visual transition between the exterior landscape and interior building spaces. The garage level would be below street level with parked vehicles out of view from the street.
Policy 5: Relate the height of buildings to important attributes of the city pattern and to the height and character of existing development (page 36).	See the discussion under Objective 1 above, Policies 1 and 3. Building heights generally decrease from up to seven stories near the slopes of Telegraph Hill to one to three stories near The Embarcadero. The building's three- and one-half story height above the existing grade would assist in maintaining the transition in building heights from Telegraph Hill toward The Embarcadero and waterfront.
Policy 6: Relate the bulk of buildings to the prevailing scale of development to avoid an overwhelming or dominating appearance in new construction (page 37).	See the discussion under Objective 1 above, Policies 1 and 3.
Objective 4 - Neighborhood Environment	
Policy 12: Install, promote and maintain landscaping in public and private areas (page 57).	The project would provide street trees contiguous with those of Front Street and improvements planned for The Embarcadero. See the above discussion under Objective 1, Policy 4.

TABLE 2
(continued)

Urban Design Plan	Proposed Project
Policy 13: Improve pedestrian areas by providing human scale and interest (page 57).	See the previous discussion under Objective 1, Policies 1, 3 and 4.
Policy 14: Remove and obscure distracting and cluttering elements (page 57).	Construction of the project would eliminate an outdoor 304-car parking lot.

TABLE 3

RELATIONSHIP OF THE PROPOSED PROJECT TO THE NORTHEASTERN WATERFRONT PLAN[1]

Northeastern Waterfront Plan	Proposed Project
1. Compatibility of Development	
Urban Design	
Objective: To develop the full potential of the Northeastern Waterfront in accord with the unusual opportunities presented by its relation to the Bay, to the operating port, fishing industry, and downtown, and to enhance its unique aesthetic qualities offered by water, topography, views of the City and Bay, and its historic maritime character (page 19).	The proposed project would be an infill project, being constructed at the site of an existing parking lot, intensifying general and professional office use in the project area. The project would not bear a relation to the Bay or maritime activities of the Port, but would preserve views toward The Embarcadero roadway and the Bay from Telegraph Hill. The building would be surfaced with brick red ceramic tile, similar in color to other structures in the project area constructed near the turn-of-the-century, relating to the historical use of masonry construction in the waterfront area.
Base of Telegraph Hill Area	
Objective 2 - Policy 2: Ensure the compatibility of new development with the area's historic and architectural maritime character in terms of scale, materials and design (page 29).	
Objective 3 - Policy 1: ...encourage development of uses which would strengthen the area's predominant uses of professional and general offices and design related activities (page 30).	

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[1] City and County of San Francisco, Department of City Planning, Northeastern Waterfront Plan, adopted by Resolution 7643 of the City Planning Commission, January 19, 1977.

TABLE 3
(continued)

Northeastern Waterfront Plan	Proposed Project
2. Building Height, Views	
Urban Design	
Policy 1: Preserve the physical form of the waterfront and reinforce San Francisco's distinctive hill form by maintaining low structures near the water, with an increase in vertical development near hills or the downtown core area (page 19).	See Table 2, Urban Design Plan, Objective 1, Policies 1 and 3. In the project area, buildings generally increase in height nearer the slopes of Telegraph Hill where the height limit increases from 40 feet to 84 feet. The project would be three and one-half stories above grade in keeping with lower building heights near the water.
Objective 5 - Policy 1: Maintain low structures near the water, with an increase in vertical development near Telegraph Hill.	
Objective 5 - Policy 2: Avoid blocking private and public views and maintain sightlines between the waterfront and Telegraph Hill (page 31).	The proposed structure would not obstruct views of the waterfront from Telegraph Hill residences.
3. Landscaping	
Urban Design	
Policy 3: Use continuous planting and other ground surface treatment to physically and visually link the waterfront with adjacent inland areas (page 19).	That portion of the project site fronting The Embarcadero roadway would contain an open area containing trees, shrubs, ground cover and walkways extending from The Embarcadero to the building's entry opposite The Embarcadero (Figure 8, page 18). This open space area would link the project to The Embarcadero roadway's improved landscaping at such time as the latter is implemented. Street trees would extend along the sidewalk adjacent The Embarcadero providing visual continuity with the landscaped open spaces of Levi's Plaza north of the project site.
Policy 17: Design and locate all landscaping so as to unify and provide continuity among the various areas of the waterfront (page 21).	
Base of Telegraph Hill Area	
Objective 3 - Policy 6: Encourage the provision of landscaping and publicly accessible open space in new development in the Base of Telegraph Hill area (page 30).	

TABLE 3
(continued)

Northeastern Waterfront Plan	Proposed Project
4. Glass	
Urban Design	
Policy 28: Prohibit the use of reflective glass. Use flat glass skylights and discourage the use of dark tinted glass in highly visible areas (page 22).	Reflective glass would not be used. The lower two floors would have clear glass. The remainder of the building would be fitted with glass tinted a light grey.
5. Rooftop Mechanical Equipment	
Urban Design	
Policy 32: Conceal any mechanical equipment, pipes, ducts and antennas on roof surfaces. Avoid shiny or highly polished materials on roof surfaces and facades (page 24).	A penthouse structure rising ten feet above the roofline would enclose the elevator machinery and mechanical equipment. The roof surface would be covered with gravel of an earth tone color (buff, beige, brown) yet to be selected, to avoid contrast between building wall and roof color.
6. Parking	
Urban Design	
Policy 13: Remove exposed surface parking from over water, from under the Embarcadero Freeway, and along the Embarcadero roadway to improve shoreline appearance and access to the Bay (page 21).	Construction of the project would eliminate an outdoor 304-car parking lot. Project parking would be provided under the building out of public view.

TABLE 4

RELATIONSHIP OF THE PROPOSED PROJECT TO GUIDING DOWNTOWN DEVELOPMENT[1]

Guiding Downtown Development	Proposed Project
A. Building Size, Design and Appearance	
(1) Reduce Overall Building Size by lowering Floor Area Ratios (FAR). Maximum FAR for the C-2 District to be 4.8 (page 4).	The FAR for the proposed project would be 3:1; present zoning would allow an FAR of 5:1 for the project site.
(2) Adjust Heights to Protect and Enhance Selected Locations (page 5). Incorporate height recommendations from the Northeastern Waterfront Plan.	The proposed building would be three and one-half stories above grade. The project would be compatible in height with other structures surrounding the project site. See Table 2, Objective 1, Policy 6; and Table 3, Urban Design Policy 1.
(5) Strengthen Urban Design Standards (page 17). (a) Create and maintain interesting street frontages and a comfortable human scale... (b) Conserve traditional street and building relationships... (d) Make new buildings sympathetic to the scale, form and proportions of older building's.	The scale and mass of the proposed building would be in keeping with the scale and mass of other buildings in the project vicinity. The building would be surfaced with brick red ceramic tile, similar to other brick and tile-surfaced buildings in the area. Metal trim along the roof edge would be reddish-brown, complementing the ceramic tile color. The Front Street entry would be through a two-story brick archway, which would repeat the arched window pattern of the 1906 S. Christian of Copenhagen Building opposite the site on the northwest corner of Green and Front Streets.

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[1] City and County of San Francisco, Department of City Planning, Guiding Downtown Development, July 1982.

TABLE 4
(continued)

RELATIONSHIP OF THE PROPOSED PROJECT TO GUIDING DOWNTOWN DEVELOPMENT

Guiding Downtown Development	Proposed Project
(9) Provide for the installation of street trees (page 18).	That portion of the project site fronting the Embarcadero roadway would contain an open area containing trees, shrubs, ground cover and walkways extending from The Embarcadero to the building's entry opposite The Embarcadero (Figure 8, page 18). The open space area would link the project to the Embarcadero roadway's improved landscaping at such time as the latter is implemented. Street trees would extend along the sidewalk adjacent to the Embarcadero roadway providing visual continuity with the landscaped open spaces of Levi's Plaza north of the project site.
B. Retail Services	
(ii) Devote ground floor space fronting on streets, pedestrian ways, plazas and courtyards to retail uses which are of interest to pedestrians and meet the need of customers generated by the proposed building and nearby buildings (page 18).	The ground floor of the structure would include a restaurant. Retail goods sales space is not proposed by the project sponsor.

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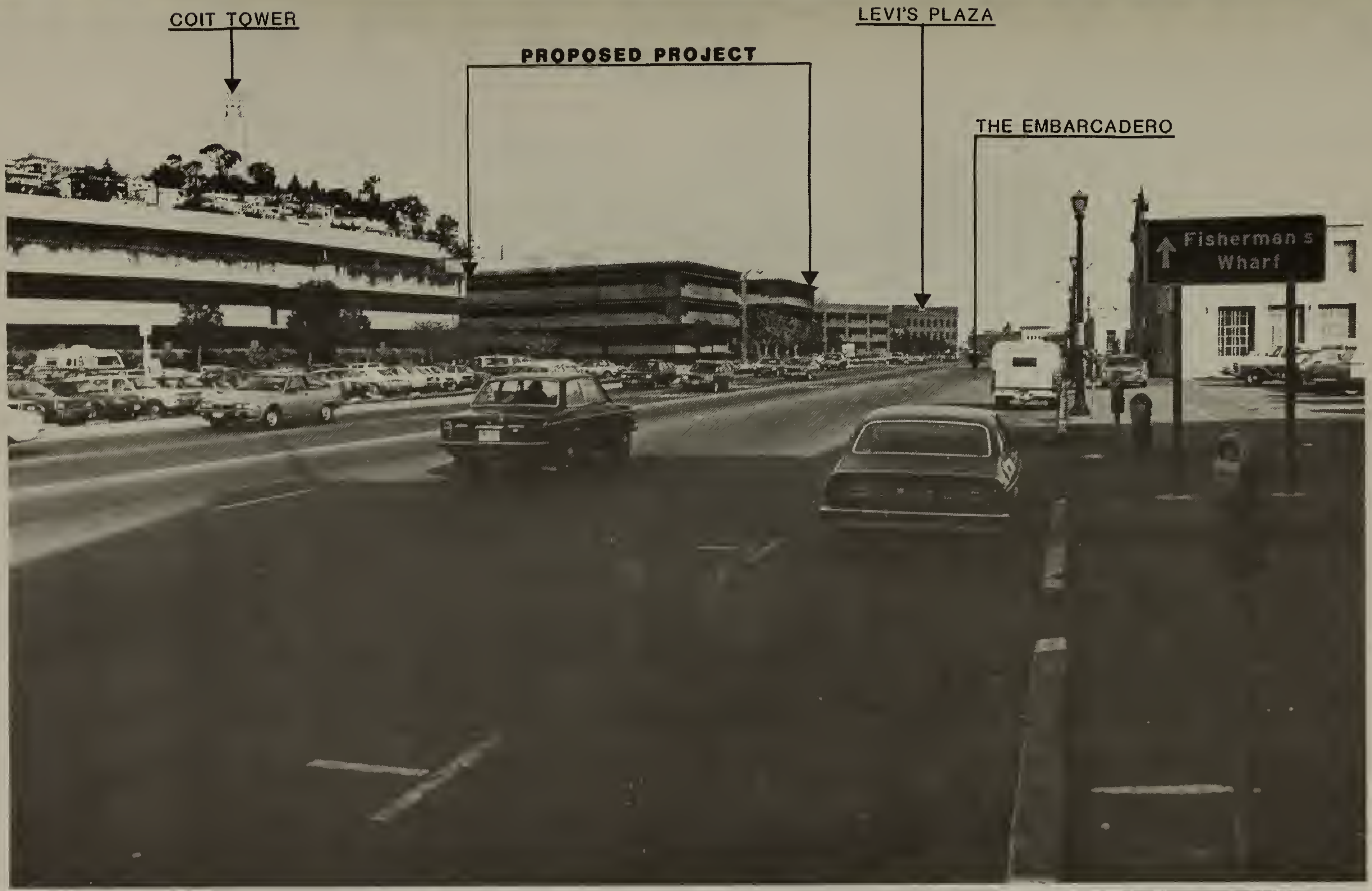
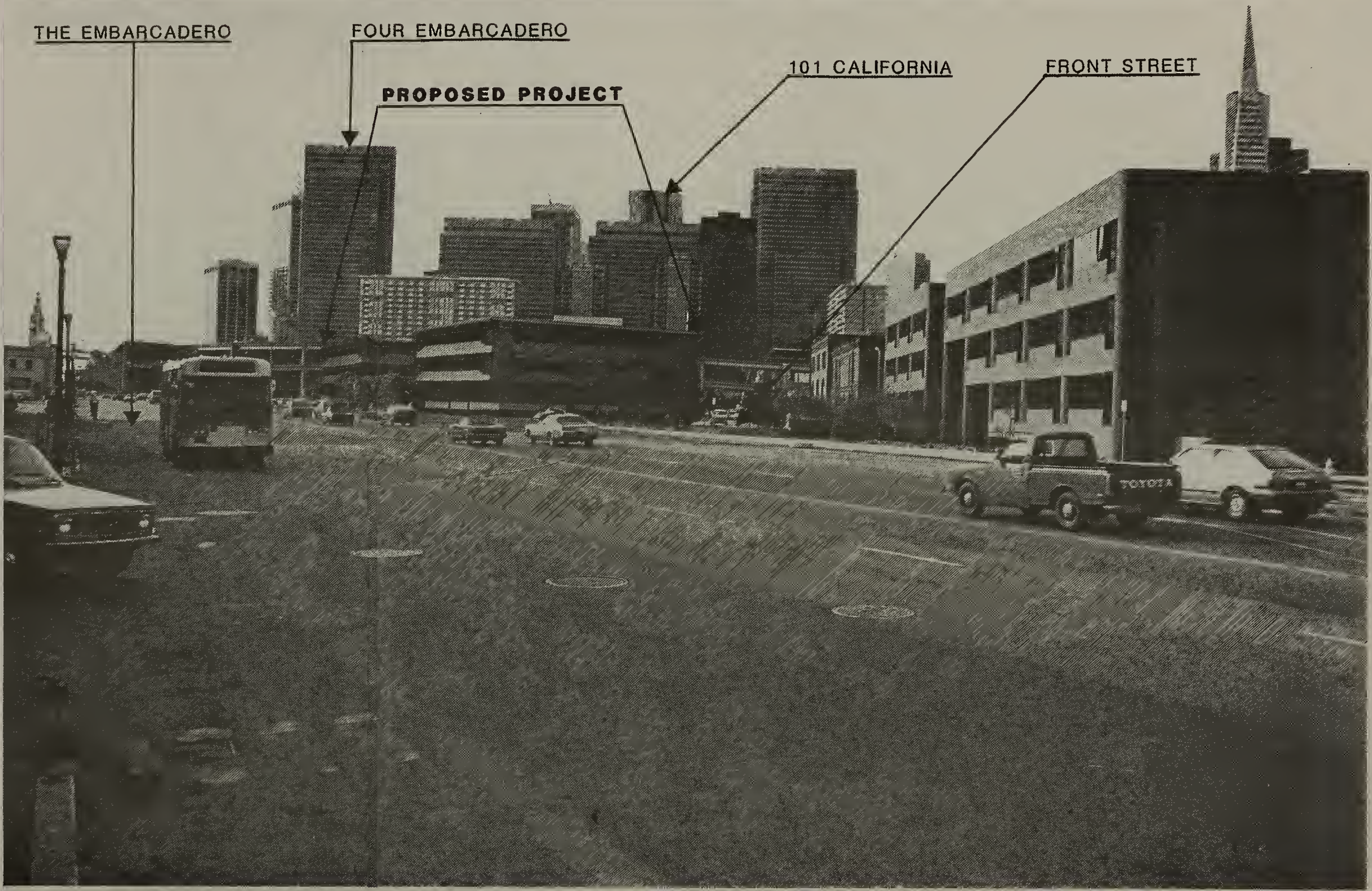
[1] San Francisco Department of City Planning, Urban Design Plan, adopted by Resolution 6745 of the San Francisco City Planning Commission, August 26, 1971.

[2] On January 19, 1977 the San Francisco City Planning Commission adopted Resolution 7643, which revised the Master Plan of the City and County of San Francisco to include the Northeastern Waterfront Plan and to delete the previously adopted Northern Waterfront Plan. The new plan encompasses an area from Fisherman's Wharf to China Basin; it was formulated to guide future development of the area in a manner consistent with the interests of San Francisco and to achieve conformity with Special Area Plan No. 1: San Francisco Waterfront, prepared and adopted by the San Francisco Bay Conservation and Development Commission in 1975, as an amendment to its San Francisco Bay Plan. Amendments to the Northeastern Waterfront Plan were adopted by the City Planning Commission by Resolution 8481 on January 31, 1980, by Resolution 8596 on May 29, 1980 and by Resolution 8781 on December 4, 1980. Source: Northeastern Waterfront Plan, p. II; Final EIR, 1299 Sansome Street Office Building, 81.415E, p. A-8, (Final Initial Study), certified by the San Francisco Planning Commission June 10, 1982.

[3] City and County of San Francisco, Department of City Planning, Guiding Downtown Development, July 1982. The document contains a series of regulatory proposals for managing development in downtown San Francisco. The proposals will undergo an extended period of public review and comment as well as environmental impact assessment. The proposals will then be modified as appears appropriate in light of that review and assessment.

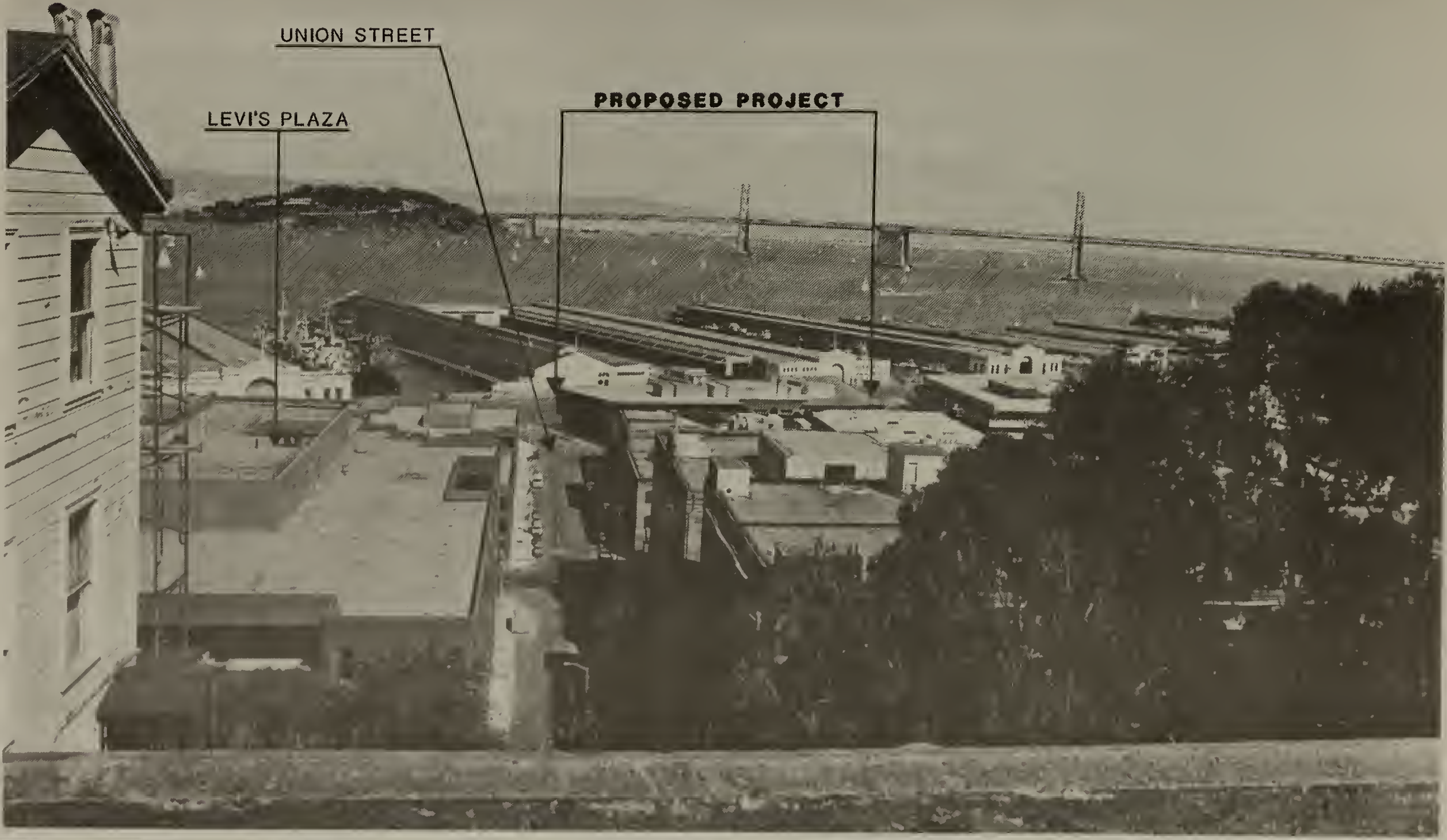


PHOTOMONTAGE: VIEW NORTH OF THE EMBARCADERO 16



PHOTOMONTAGE: VIEW SOUTH DOWN FRONT STREET OF THE EMBARCADERO

17



PHOTOMONTAGE: VIEW EAST ON UNION STREET AT CALHOUN TERRACE

18

D. HISTORIC AND CULTURAL RESOURCES

The project site is in an area designated in 1983 as the Northeastern Waterfront Historic District. This district includes warehouses and waterfront industrial buildings from nearly every decade since the Gold Rush era. Several structures in the project area, the S. Christian of Copenhagen warehouse building, the Butterfield and Butterfield building and the Botsford, Ketcham building, have been designated for architectural merit. The proposed Embarcadero Terraces structure would incorporate building materials and architectural design elements, such as arched windows and entryways, to reflect the S. Christian of Copenhagen building and other structures in the project area.

The 1887 Sanborn map shows that the site was once utilized as a lumber yard, boatyard and coal shed. The most important cultural objects likely to be buried in landfill along the San Francisco waterfront are the wooden hulks of nineteenth-century sailing vessels. The approximate locations of many of these hulks are described in historic resource documents and are approximated on a map prepared by the San Francisco Maritime Museum.[1] An archaeological report for the site was prepared and appears as Appendix B, page A-21.

An article in Alta California indicates that in 1852, the storeships Chester, Caladonia, Dalmata, Dryade, Envoy, Marsey, Orion, Othello, Philip Hone and Rhone lay near Law's Wharf.[2] (Law's Wharf can be seen on the 1853 Coast Survey chart as approximately at the intersection of Front and Union Streets.)[3]

Archival research suggests that the remains of one, or perhaps more, Gold Rush vessels, primarily the Philip Hone, may lie within or adjacent to the proposed Embarcadero Terraces site (the Philip Hone has also been placed at another location by another source). As noted in the archaeological report for the site, the archival data is not conclusive; documentary sources are sometimes contradictory or ambiguous, and limited evidence provides tentative conclusions (see Appendix B, pages A-22 and A-23).

Due to the presence of known approximate sites of historic ships in the project vicinity, archaeological testing was done to determine whether potentially significant artifacts might exist on the project site (see Appendix B, Archaeological Report, page A-21). The test borings produced wood samples which included a trunnel. A trunnel or "tree nail" is a hand-hewn cylindrical wooden peg used to fasten the oaken hull plates of the vessels to the ribs and other structural members; it was a common part of eighteenth and nineteenth-century sailing ships.

Evidence from the test borings indicates the possible presence of a buried Gold Rush hulk, such as the Philip Hone, at the site but the evidence is inconclusive and several alternative explanations could account for the presence of materials found in the test borings.

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[1] Maritime Museum Map, "Gold Rush Vessels Beached, Scuttled or Broken Up." The map is currently being prepared for publication, although a publication date has not yet been set. The map has not been revised since 1964, and ships not shown on the map have been discovered during excavation for other buildings. See also Olmsted, Roger R., Nancy L. Olmsted and Allen Pastron, San Francisco Waterfront: Report on Historical Cultural Resources, prepared for San Francisco Wastewater Management Program, December 1977.

[2] Roger R. Olmsted, Nancy Olmsted and Allen Pastron, Levi's Plaza: Report on Historical and Archaeological Resources: Appendix B to the Levi's Plaza Environmental Impact Report, submitted June 23, 1978.

[3] Roger R. Olmstead, Nancy Olmstead and Allan Pastron, San Francisco Waterfront: Report on Historical Cultural Resources, prepared for San Francisco Wastewater Management Program, December 1977, p. 29.

E. EMPLOYMENT, HOUSING AND FISCAL FACTORS

1. Employment

When the proposed building is fully occupied, about 570 permanent jobs would be provided for office, restaurant and maintenance functions. This would include about 556 office workers (at one worker per 250 square feet of office space for 139,000 square feet), 9 restaurant workers (at one worker per 350 square feet for 3,000 square feet), and 5 janitorial/service workers (at one worker per 30,000 square feet).[1]

The jobs generated by the proposed project would create additional employment in the Bay Area through the multiplier effect. Assuming that the new jobs created as a result of the project were primarily in the finance, insurance and real estate industries, about 610 additional jobs in other sectors of the Bay Area economy could result. Table G-3, page A-74 in Appendix G, shows the distribution of this secondary employment by sector. The multiplier encompasses the entire Bay Area and the specific number of additional jobs in San Francisco as a result of the multiplier effect is not possible to calculate.

The total number of permanent new Bay Area jobs that would be supported by the project's addition to the stock of downtown office space would be about 1,180 (570 direct jobs plus the 610 jobs induced by the multiplier).

Construction activities are expected to continue for about two years and generate about 200 person-years of construction labor (about 100 full-time jobs at any one time during construction).[2] As a result of the multiplier effect of project construction, about 310 additional person-years of employment would be generated in the Bay Area.[3] Some of this secondary employment would be in San Francisco, although it is difficult to estimate the amount.

2. Housing

The project would increase the demand for housing in San Francisco. According to the Department of City Planning Office Housing Production Program (OHPP), Interim Guidelines, January, 1982, the housing demand generated in San Francisco by the project would be 123 units.[4] This estimate assumes 40% of the 556 new office workers would reside in San Francisco and 1.8 office workers per household containing San Francisco office workers. No on-site housing is proposed as part of the project. The project sponsor would provide the number of housing units up to 123, according to OHPP guidelines (see Section V., Mitigation Measures, page 119).

The relationship between downtown office growth and housing demand in San Francisco was documented in a report prepared by Recht Hausrath and Associates, a Bay Area urban economics firm, and appears as Appendix C, pages 289 through 329, of the 101 Montgomery Street EIR, certified by City Planning Commission Resolution 8941, May 7, 1981. This report is available for public review at the Department of City Planning, 450 McAllister Street, fifth floor, and is hereby incorporated by reference into this EIR pursuant to Section 15149 of the California Environmental Quality Act (CEQA) guidelines.

This study estimated that 15% to 30% of the people newly employed in San Francisco as a direct result of the downtown office projects would desire to move to San Francisco and that there are an average of 1.4 San Francisco workers in each San Francisco household which contains downtown workers. Under these assumptions, the project would create a demand for about 60 to 119 dwelling units in San Francisco. The study further concluded that most people cannot afford housing cost in the City despite relatively high wages and employment opportunity.

The housing stock in the City is expanding, but not at a rate adequate to accommodate the needs of all the employees who work in San Francisco. Many factors, including job growth, land availability and interest rates have affected housing affordability both in the City and the Bay Area. Low and moderate income households have been especially impacted as the tight market has led middle-income households to compete with low and moderate income households for the same housing stock.[5] Household income in San Francisco grew less than the rate of inflation over the past decade and this income is lower than the other counties such as Contra Costa and Santa Clara.[6] If workers from these areas move into the City, residents on fixed incomes with relatively large households could be at a disadvantage in terms of their ability to afford housing. However, there are no specific data available on the nature of population turnover in the City due to changes in housing costs.

Table G-2, Appendix G, page A-72 indicates the relationship between housing prices and incomes in the City. Recht Hausrath and Associates concludeds that accurately identifying housing affordability characteristics for persons who would enter the San Francisco housing market as a result of a new office project is a complex problem and virtually impossible to determine satisfactorily.[7] One major problem is that the identity and financial resources of the persons employed in the new space cannot be known prior to project occupancy. In addition, even if such information were to be obtained, it would not provide a satisfactory basis for estimating the housing impact of the project for several reasons: First, persons actually working in newly constructed space, as noted above, would not necessarily be newly employed in San Francisco as a result of the project (Recht Hausrath, pages 6, 8 and 15); second, although some of the employment opportunities in the project would be newly available, those filling the positions might not be newly employed in San Francisco - most persons obtaining newly available employment in the City have been employed here previously; and third, persons newly employed in San Francisco in newly created jobs might not have obtained their job as a result of new office development; their employer may have created the new opportunity in another building if the project were not built (Recht Hausrath, pages 11 and 23).

Thus, identifying housing affordability for a specific household would require a survey that probed well beyond conventional survey information such as income, housing preference, and current housing costs, to ask for information such as household assistance through family networks, tax position, and health. This kind of information is necessary to obtain an accurate picture of housing needs and desires, and the ability to fulfill them (Recht Hausrath, pages 4-5, 17-19, 28-30), yet obtaining such information is unlikely since respondents may not be willing to provide such detailed information. Moreover, because it is not possible to adequately identify the appropriate study population, it cannot be determined what portion of this population any identifiable survey population represents. Under these circumstances, the information obtained from such a survey would be a limited indicator of the actual effects of new office construction on housing.

Survey respondents would probably be willing to identify what they currently pay for housing; to answer questions about housing preferences; and to provide information on housing type, location, and tenure, on household demographic characteristics, and on household income. This information would provide a description of actual housing behavior and an indication of housing preferences. It would not necessarily provide an accurate description of current housing affordability or what workers could afford as housing market conditions change.

Based on available data, an approximation of a housing affordability analysis appears in Appendix G, Table G-2, page A-72. Data in the table rely on published sources of office worker incomes (not household income), and prices of housing (without regard to housing availability). Assumptions are made regarding ratio of housing expenses to income, mortgage interest rates and down payments. Analysis based on these data and assumptions indicates that most project employees would not be able to afford ownership housing in San Francisco, although a significant minority, depending on the number of workers per household, would be able to do so. Most project employees, except the lowest-paid clerical employees desiring to live alone, would be able to afford rental housing in San Francisco.

3. Cumulative Effects

The 139,000 square feet of office space proposed for the project would constitute about a 0.8% increase over the 18.4 million square feet of new net office space newly constructed (2,996,050 square feet) currently under construction (6,076,000 square feet), approved (5,224,800 square feet), or under formal review (4,141,540 square feet) in downtown San Francisco. A list of the projects included in these totals is presented in Appendix F, Table F-1, page A-63.

In the local area at the base of Telegraph Hill, about 527,000 square feet of office development are currently under formal review, approved or under construction (see Section IV.B., Table 1, page 47). The proposed project represents 26% of this amount. If all 18.4 million square feet of office space were to be completed in the downtown by 1990, there could be a short-term impact of oversupply while the market adjusted itself to absorb the new space. During this period, commercial rents would be expected to decline, especially in the core of the downtown area, and vacancy rates would rise. The number of proposed new office developments could decline if there were not sufficient demand for office space then planned or under construction, and for office space that will become available due to existing leases that will expire.

Office workers employed by the project would contribute to the cumulative impact of office development upon City and regional housing demand. Table G-1, Appendix G, page A-71, indicates that project demand would range from 0.1% to 0.2% of projected housing growth from 1982 to 1990. The cumulative housing demand by household shown in Table G-1 is based on the list of downtown office projects presented in Table F-1, Appendix F, page A-63.

This impact on the housing market would be mitigated to a certain extent because various office developers have agreed to provide units through City Planning Commission final motions approving their proposed projects; that is, as a condition of project approval, by implementing the OHPP guidelines.[4] Cumulative office development would increase the City's current high ratios of jobs to housing supply. Housing demand would increase in an already tight housing market. In market situations where demand outstrips supply, prices can be expected to increase.

Factors independent of office development and outside the control of the City, for example, immigration, interest rates, state and federal tax policies, and economic trends, also influence the housing market. Quantification of the effects of cumulative office development on San Francisco housing prices is not possible.

The new demand for housing could be expected to be accommodated through additions to the housing stock, increases in the number of office workers per household, and/or displacement of existing residents. Large additions to the San Francisco housing stock are not anticipated in the near future because the housing construction industry has declined due to high costs and interest rates. Census data indicate that the number of people per household has historically been declining. This demographic trend will probably not reverse itself in the next few years due to a variety of factors, including divorce and separation, departure of young adults from families, and the increasing proportion of elderly population.

4. Fiscal

a. Revenues

The proposed project would generate revenues from property, business, utility users, and sales taxes. These revenues are summarized in Table 5, page 71.

TABLE 5

ESTIMATED REVENUES GENERATED BY THE PROPOSED PROJECT FOR THE CITY AND COUNTY OF SAN FRANCISCO

Tax		Estimated Amount of Revenue
Property tax		$ 277,000
Business tax (less current parking taxes)		245,400
Utility Users tax		
Electricity	$ 3,375	
Gas	870	
Water & Sewer	156	
Telephone	9,940	
Total	14,300	14,300
Sales tax		15,000
Total New Revenues		$ 551,700

Source: EIP

Note: See text for description of revenues. Numbers are rounded.

Assessed Valuation and Property Tax. The calculation of property tax is complicated because the site is under the jurisdiction of the Port of San Francisco. The assessed value of property controlled by the Port is based on the concept of possessory interest, which applies whenever land controlled by a tax exempt agency is leased for private use. In the case of this project, the Port would lease the land to the project sponsor who would construct the proposed building. Historically, the Assessor has calculated assessed value of land based on possessory interest by discounting the total stream of lease payments by 10% after subtracting 15% to cover the Port's expenses in administering the lease. This procedure might be different at the time the proposed project is built, but under these criteria, and assuming annual land lease payments of $1.5 million, the site would be assessed at about $13.9 million.

Further, the improvements on the property would be assessed at full value. Construction of the proposed building shell and all tenant improvements would cost about $14.1 million.[8] Thus, the total assessed value for the project would be about $28 million. The net increase in assessed value (subtracting the current assessed value) would be about $27.8 million.

Total annual possessory interest fees would be $325,000 based on the 1% of full value maximum tax levy allowed under Proposition 13, plus an additional levy of 0.17% of full market value for repayment of existing bonds previously approved by the electorate (the current total rate for the 1982-1983 fiscal year is $1.17% of full market value). It is not known at present how the property taxes would be distributed at the time the project is completed; however, applying the 1982-1983 rate, the City and County of San Francisco could receive about $277,000 from the project (85.2% of the total composite property tax revenues). A portion of these revenues would go into the General Fund and a portion would go into the Debt Service Fund to pay off existing bonds. Table 6, page 73, presents the distribution of net property tax revenues to the appropriate agencies.

Business Tax. The business tax is actually comprised of the gross receipts tax and payroll tax:

- Gross Receipts Tax. This part of the business tax would be paid on lease revenues from the project. Assuming the space were to lease for about $35 per square feet

TABLE 6

DISTRIBUTION OF PROPERTY TAX GENERATED BY THE PROPOSED PROJECT

(net of current revenues)

Agency	Property Tax Revenues
City and County of San Francisco	$ 277,000
San Francisco Unified School District	23,700
San Francisco College District	4,200
Bay Area Pollution District	325
BART	19,500
TOTAL	$ 325,000[1]

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[1] Total does not add due to rounding.

Source: EIP

net on average, this tax would equal $14,900 (the tax rate is $3.00 per $1,000 gross receipts).

- Payroll Tax. The firms located in the project would pay this business tax. The tax rate is 1.5% of total payroll. Assuming office workers earn on average salary of $32,200 and that other workers in the project would earn an average of $15,000 annually, this tax would total approximately $271,500.[9]

Utility User's Tax. Utility user's tax revenues are paid on the cost of electricity, gas, water, and telephone use.[10] Expected revenue from the project would include:

Electricity
1,500,000 kwh/year x $.045/kwh x $.05 tax = $3,375

Gas
50,000 therms x $.34779/therms x $.05 tax = $870

Water
(333,785 cubic feet water/year x $0.00414/cubic foot) plus
(333,785 cubic feet sewage/year x $.0115/cubic feet) x $.05 tax = $156

Telephone
142,000 square feet x $1.40 square foot x $.05 tax = $9,940

The total utility user's tax would be about $14,300. Current revenues from this source are negligible.

Sales Tax. $706,100 annual taxable sales by office employees x 1% tax = $7,061.[10] The retail businesses in the project would generate an additional $7,980, for a total of about $15,000 in annual sales tax to the City.[11] No sales tax revenues are currently generated on the site.

Sales tax revenues generated by the one-half percent BART sales tax would be about $7,500. Of this total, BART would get $5,625 directly and the remaining $1,875 would be distributed by the Metropolitan Transportation Commission among BART, Muni and AC Transit.

The project sponsor could be required to pay a one-time Transit Development Fee pursuant to Ordinance No. 224-81. This ordinance requires developers of office projects in San Francisco to contribute to a fund to finance the increased costs of Muni services necessitated by their projects at the rate of $5 per gross square foot of new construction. The legality of this ordinance has been challenged and the matter is currently pending in San Francisco Superior Court. If the fee were to be upheld, the project could yield $725,000.

Total Revenues. The total annual revenues to San Francisco from the project would be approximately $551,700; however, this figure is subject to a number of variables that could affect the estimates. For example, property tax distribution could change in future years; payroll tax would vary according to the salaries of the employees in the proposed project; rents of the office could change, thereby affecting the gross receipts tax; and costs for utilities, particularly telephone, are also variable. The $551,700 represents an increase of about $509,000.

b. Costs

Costs for providing municipal services to the proposed project are difficult to quantify. Most evidence indicates that overall costs per unit of service provided (per square foot or per employee) to the new building would be lower than for the existing buildings (see Appendix G, Table G-4, page A-75). This reduction in per square foot costs is primarily due to improvements in fire and security protection systems in new construction. Costs for water and sewer service would be paid through user charges.

Cost increases due to increased patronage from cumulative development would be expected for Muni, SamTrans, BART, and Golden Gate Transit. The City's general fund provides for a subsidy to the Municipal Railway's operating budget. The subsidy covers the difference between Muni's costs and the revenues that Muni receives from fares and from federal and state governments and represents the costs of Muni to the City. The net marginal cost (or increase in the deficit for Muni operations) per peak hour ride was $0.39 in 1982.[12] The proposed project would generate about 270 peak-period trips (see Section IV.F., Table 9, page 81) which could generate a cost to Muni of $27,400.[12] The extent to which this cost would be met by an increase in the general fund allocation to Muni is not known. State and federal funds to Muni are decreasing and the City is reviewing other options for increased revenues.[13]

It is estimated that 140 peak hour trips a day on BART would be generated by the proposed project employees. The deficit per rider for BART is estimated at $.97.[14] Using this rate, the proposed project would generate a deficit of about $35,300. Additional property tax and sales tax revenues generated by the project for BART would reduce this total deficit to about $10,200.

If the same proportion of General Fund revenues historically allocated to Muni continued, it could be assumed that the proposed project revenues would exceed municipal costs directly attributable to the project at the time of occupancy. Due to limitations imposed by Proposition 13 on property tax increases, revenues might not increase as rapidly as inflationary increases in City costs. If all current sources of revenue associated with the proposed project were held constant (i.e. fees and rates do not change and no new assessment levied) costs would eventually exceed revenues.[15]

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[1] Office employment derived from: San Francisco Department of City Planning, Revised Guidelines for Administering the Housing Requirements Placed on Office Development under OHPP, December 7, 1981. Retail and maintenance employment derived from analysis in: 101 Montgomery Street, FEIR, certified May 7, 1981, page 77.

[2] An estimated $11,000,000 (1982 dollars) would be spent during construction. Bert Ewart, Project Designer, Munselle/Brown Partnership, telephone conversation, July 27, 1982. Employment estimate assumes labor costs would be about 55% of the total (11,000,000 x 55% = 6,050,000), including direct wages, payroll taxes and fringe benefits, and annual cost of $30,000 per construction worker.

[3] All multipliers based on the Bay Area Input-Output Model from Cooperative Extension Service, University of California, Berkeley, San Francisco Bay Area Input-Output Model 1967-1974. This is the equivalent of a multiplier of 1.55 in that for each person-year of employment supported by project construction, an additional 1.55 person-years of secondary employment would be supported.

[4] $\frac{139{,}000 \text{ gross square feet}}{250} \times 40\% \div 1.8 = 123$

San Francisco Department of City Planning, Revised Guidelines for Administering the Housing Requirements Placed on Office Development under OHPP, December 7, 1981, page 5.

[5] City and County of San Francisco, Report of the Citizen's Housing Task Force, July 29, 1981, pages 114 and 115.

[6] San Francisco Department of City Planning, "Summary of Recent Census Information," October 28, 1982.

[7] Recht Hausrath Associates, "The Feasibility of Performing a Housing Affordability Analysis Relevant to Office Growth in Downtown San Francisco," July 1982.

[8] Burt Ewart, Project Designer, Munselle/Brown Partnership, telephone conversation, July 27, 1982.

[9] Office employee income is an average, rather than a median, and is estimated from: San Francisco Planning and Urban Renewal Association, Impact of Intensive High-Rise Office Development - Detailed Findings, Table 21, page 117 (1975). The 1974 data have been inflated by 94% to reflect 1983 dollars. This represents the mid-point of the range of increases for office-related occupations as given in U.S. Department of Labor, Area Wage Survey: San Francisco-Oakland SMSA, Washington, D.C., March 1982, page 11. Other wage levels obtained from California Employment Development Department, California, Employment and Payrolls, October-December 1977, inflated to 1983 dollars.

[10] Factors for electricity, gas and telephone taxes are obtained from 135 Main Street Building Final EIR, EE81.61, certified November 30, 1982. Water consumption assumes 15 gallons/day/employee, from Environmental Impact Analysis Handbook, Rau and White, McGraw Hill, New York, 1982, pages 6-40.

[11] Based on information presented in 101 Montgomery FEIR EE 80.26, certified May 7, 1983, page 83.

Sales tax revenue per 1 square foot of commercial space is estimated to be $2.66 based on an estimated 3,097,000 square feet of commercial area in the C-3-0 District and 1980-1981 allocation of $8,250,000 in Sales Tax Revenue (Gruen Gruen + Associates, page 111, City and County of San Francisco Appropriations Ordinance (1980-1981) and Arthur Andersen & Company, Table 11-4).

[12] Bruce Bernhard, "The Marginal Cost of Peak Muni Passenger Trips per Unit of Office Space," San Francisco Utilities Commission, February 1981. 260 x $.39 x 260 working days a year = $26,400.

[13] Bruce Bernhard, San Francisco Public Utilities Commission, conversation, January 18, 1982.

[14] Marty Birkenthal, Research Analyst, BART, telephone conversation, June 15, 1983. 140 rides x 260 working days x $0.97 = $35,300.

[15] 101 Montgomery Street FEIR, EE 80.26, certified May 7, 1981, Appendix C, pages 316 to 318.

F. TRANSPORTATION, CIRCULATION AND PARKING

1. Project and Cumulative Trip Generation/Distribution

Based upon City guidelines[1] and trip generation research[2] the proposed project would generate about 2,860 person trips, of which 290 trips would occur in the peak hour and 450 trips would occur in the peak period. About 1,020 daily trips would be work trips and 1,255 trips would be non-work trips (lunch hour trips by employees, visitor's trips and trips to/from the restaurant portion of the project). The daily and peak hour trip generation calculation is shown in Table 7, page 79.

Trip generation and modal split have also been projected for office and retail development under construction, approved or under formal review in the downtown area (including South of Market) as of June 1, 1983.[3] The cumulative downtown office projects total about 18.4 million gross square feet of office and 620,000 gross square feet of retail. (It should be noted that the total square footage of downtown projects under formal review by the Department of City Planning fluctuates because projects often undergo design change and/or may be withdrawn or disapproved.) When completed and occupied, these downtown projects would have an estimated cumulative generation of about 45,000 p.m. peak hour person trips (see Table 8, page 80). The Embarcadero Terraces project would amount to about 0.75% of the cumulative peak hour generation if included with these downtown projects.

In projecting cumulative impacts, an alternate approach forecasts travel demand based upon regional projections of employment share (rather than land use as used in this EIR).[4] With a sufficiently detailed data base, the share of future employment for downtown San Francisco (as a part of the greater Bay Area region) can be projected, based directly upon long-range trends. Appendix E, page A-52, discusses the differences between the two approaches.

The estimated modal split for the office portion of the proposed project is based on City guidelines and the modal split for the restaurant is based upon a survey of two other restaurants in the project area.[5] The apportionment of project trip generation has been calculated from these estimates and trip totals are outlined in Table 9, page 81.

TABLE 7

PROJECT PERSON TRIP GENERATION

Land Use	Daily Trip Rate	Daily Trips	Peak Period Trip Rates 1 hr/2 hrs	Peak Period Trips 1 hr/2 hrs
139,000 Gross Sq. Ft. Office	18.1/1,000[1]	2,515	1.90/3.00[1]	265/415
3,000 Gross Sq. Ft. Restaurant	130/1,000[2]	390	7.80/11.70[2]	25/35
TOTALS		2,860		290/450

2,515 office trips	x	40%	=	1,005	work trips	x	60% =	1,510	non-work trips
390 restaurant trips	x	4%	=	15	work trips	x	96% =	375	non-work trips
	TOTALS			1,020	work trips			1,885	non-work trips

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[1] Source: DCP, Guidelines for Environmental Review, August 1983.

[2] Source: Caltrans, 11th Progress Report on Trip Ends Generation, July 1980, page 171.

TABLE 8

PEAK PERIOD PERSON TRIP GENERATION OF DOWNTOWN DEVELOPMENT[1]

	Peak Period (1 hour/2 hour) Cumulative Trip Generation			
Transportation Mode	Total Trips	Retail Trips	South of Market Office Trips	Downtown Office Trips
Auto	10,050/15,350	840/1,680	3,610/5,360	5,600/8,310
Muni	11,520/17,670	1,120/2,240	970/1,440	9,430/13,990
BART	8,200/12,270	190/380	640/950	7,370/10,940
AC Transit	2,770/4,150	90/180	320/470	2,360/3,500
Golden Gate Buses	1,460/2,210	90/180	190/280	1,180/1,750
S.P.	720/1,070	---	130/190	590/880
SamTrans	420/620	---	130/190	290/430
Ferry	290/430	---	---	290/430
Charter bus	130/190	---	130/190	---
Other	9,690/17,990	7,000/1,400	330/490	2,360/3,500
	45,250/71,950	9,330/18,660	6,450/9,560	29,470/43,730

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[1] Cumulative development as identified in Appendix F, Table F-1, page A-62.

Source: EIP Corporation

TABLE 9

DISTRIBUTION OF PROJECT TRIPS DURING PEAK COMMUTE PERIODS

Trip Location and Mode		Peak Person Trips (1 hour/2 hour)
San Francisco	Auto	20/35
	Muni	85/135
	BART	10/15
	Walk	30/45
	Other	15/30
East Bay	Auto	15/20
	BART	45/70
	AC	20/30
	Other	5/10
Peninsula	Auto	10/20
	BART	5/10
	SamTrans	5/10
	S.P.	5/10
	Other	---
North Bay	Auto	5/10
	G.G.T. Bus	10/15
	G.T.T. Ferry	5/10
	Other	---

Source: EIP Corporation

2. Impacts on the Street System

With an auto occupancy of 1.4 persons per vehicle, the proposed project would generate about 35 peak hour auto trips.[6] With an auto occupancy of 1.4 for the downtown area and 1.2 for the South of Market area, the cumulative development would generate about 7,600 p.m. peak hour auto trips.

To assess existing traffic conditions on the surface streets, peak hour counts were conducted at key locations.[7] Based upon traffic flow patterns and discussions with City staff, p.m. peak hour counts were conducted at the intersections of Broadway/Sansome and Broadway/Battery.[8] Capacity calculations (calculation sheets are on file and available for review at the Department of City Planning, 450 McAllister Street, 5th Floor) indicate that Broadway/Sansome is operating at service level B (very good), while Broadway/Battery operates at service level C (good). (Service level definitions are shown in Appendix C, page A-46.) Site access is affected by congestion on the regional links. During the p.m. peak hour both the I-80 freeway (eastbound) and Highway 101 (southbound) operate at jammed conditions associated with service levels E-F.[9]

A cordon count of peak hour travel in/out of the downtown indicates a total volume of about 79,500 vehicles entering and leaving the downtown area during the p.m. peak hour.[10] Because a portion of this volume represents a "double counting" of through trips the actual volume is estimated at about 70,000. The 7,600 vehicle trips generated by cumulative downtown development would increase the existing volume by about 10%. If it is assumed that traffic to and from downtown at key intersections would increase proportionally, the effects on the Broadway/Battery and Broadway/Sansome intersections would be as outlined in Table 10, page 83. It would be tenuous to predict a specific distribution of the project traffic. It has been assumed, however, that up to one-half (15-20 vehicle trips) of the project's p.m. peak hour vehicle trips would pass through the analyzed intersections. As indicated in Table 10, the addition of project traffic would not degrade intersection service levels further. Due to cumulative development including the project, however, the Broadway/Battery intersection would be approaching unstable flow conditions of increasing restriction (level D), and the Broadway/Sansome intersection would operate at level B-C, a change from level B.

It is noted that (allowing for typical count errors) the 1983 cordon count appears to be comparable to the count conducted in 1965.[11] As development has occurred, increased travel demand has apparently resulted in a spreading of the peak period and a shift from auto to transit modes.

TABLE 10

EXISTING AND PROJECTED INTERSECTION SERVICE LEVELS

	Service Levels		
Intersection	Existing	With Project	With Cumulative Development
Broadway/Battery	C	C	D
Broadway/Sansome	B	B	B-C

Current peak hour volumes on regional highways are presented in Table 11, page 84. The project's 35 vehicle trips would have no measurable effect on these highways. However, cumulative downtown development would generate traffic which would theoretically increase the peak hour volumes by 4% - 13%. Because the Bay Bridge and Highway 101 (to the Peninsula) currently operate at capacity, peak-hour volumes could not increase. The effect of this added volume would be to extend the jammed (service level E-F) conditions currently occurring during the peak hour. Highway 101 experiences capacity traffic levels throughout much of the 3-7 p.m. period. With added demand, volumes would be jammed throughout this period.

These traffic impacts assume that new downtown employees (generated by cumulative development) would continue to follow existing modal split patterns. Because the regional highway network is operating virtually at capacity during the p.m. peak hour, new employees may choose to shift to alternate modes. As outlined in subsequent sections, BART, AC Transit and Southern Pacific service would increase capacity within the next five years. Although these systems would still be congested, they could attract an increasing share of the peak hour travel. A secondary mode shift would be the increased formation of carpools and/or vanpools. With potential trends for increased transit usage and vehicle occupancy, the actual cumulative effects on the street network would be correspondingly reduced.

TABLE 11

EXISTING PEAK HOUR VOLUMES ON REGIONAL HIGHWAYS

Facility	Existing Peak Hour Volume
Highway 101 (south of I-80)	15,100
Highway 101 (north of Golden Gate Bridge)	11,000
Highway 80 (north of Highway 101)	17,100
Highway 280 (Mariposa to Brannan)	4,600

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[1] Source: Caltrans, 1981 Traffic Volumes, 1982.

The project would have a localized effect on the streets bordering the site. The project's 50-space parking garage (125 spaces with attendant parking) would be accessible from Green Street. Green Street would continue to have access only via Front Street - there would not be an extension of Green Street to The Embarcadero.[12] The traffic generated by the project would, however, be less than the existing traffic generated by the 304-space surface parking lot now on the site. If the project were to incorporate attendant parking, some vehicle back-ups could occur on Green Street as arriving motorists wait for the attendant to park their car. If one-half of the 125 vehicles arrived during a peak hour, vehicle queues would probably be about three to five cars. The parking garage ramp would be about 120 feet, a length which could accommodate the queues without backing vehicles onto the sidewalk or street.

3. Transit Impacts

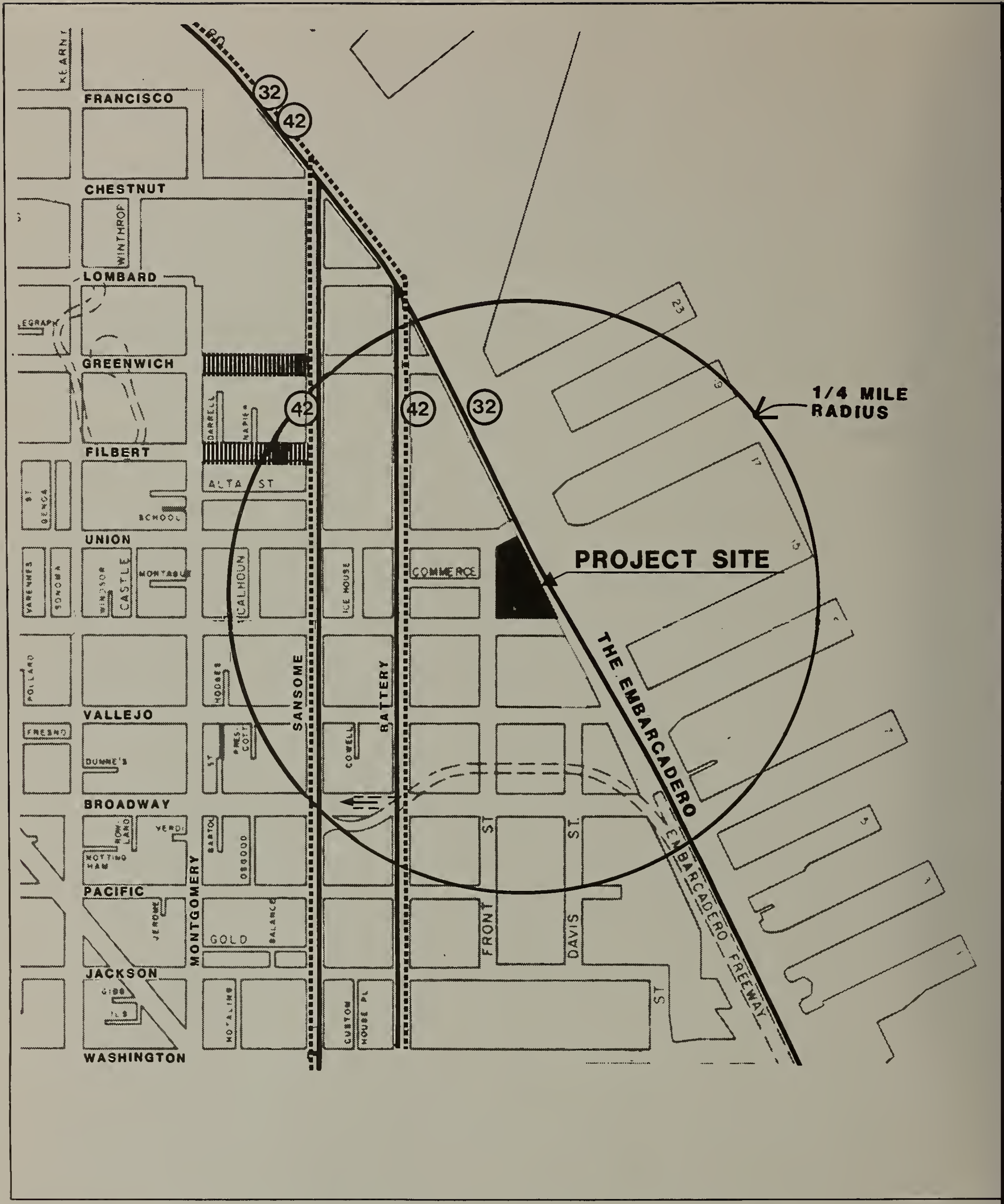
a. San Francisco Municipal Railway

Muni operates two routes within walking distance (one-quarter mile) of the project site; the 32-Embarcaderco, and 42-Downtown Loop (see Figure 19, page 86).

The projections for transit impacts in this EIR include existing patronage, patronage due to the project and anticipated patronage attributed to cumulative development which is newly constructed, under construction, approved or is under formal review in the downtown study area. Muni staff indicate that lines in the site vicinity experience peak ridership inbound during the p.m. peak hour.[13] With the completion of cumulative development proposed for the base of Telegraph Hill area an estimated 545 p.m. peak-hour passengers would be added to inbound travel on these lines. Table 12, page 87, shows the p.m. peak hour patronage, capacity and load factors for the lines within one-quarter mile of the proposed project. The proposed project would increase the projected peak-hour load (reflecting cumulative downtown development) for the Muni lines within walking distance of the project by approximately 15% (inbound toward the project).

The peak hour patronage from the proposed project has been added to the projected patronage (reflecting cumulative project area development) on a line-by-line basis for both inbound and outbound travel. This distribution has assumed that 75% of the project's Muni patrons and 100% of the BART, AC Transit, SamTrans and SP patrons would travel in the inbound direction on the Muni lines serving the area (see Table 12, page 87).

Muni plans project a 19% increase in the system capacity over the next five years.[14] This increase would reflect added capacity in the Muni Metro light-rail service, and the replacement of existing buses with articulated coaches. Muni expects to complete engineering for the proposed E-line by 1986 and construction by 1989. This line would run in an exclusive rail right-of-way along the Embarcadero roadway from Fort Mason to the SP Depot. As shown in Table 12, this capacity increase would generally accommodate the projected patronage; specific benefits, however, would depend upon a more detailed improvement program with capacity increases cited for each route.



SOURCE: EIP

Embarcadero Office Terraces

EXISTING TRANSIT SERVICE

19

TABLE 12

EXISTING AND PROJECTED MUNI PATRONAGE IN PROJECT VICINITY DURING P.M. PEAK HOUR

Line (Direction)	Partonage			Seated Capacity		Load Factors V/C[3]		
	Existing	Future W/O Project	Future W/Project	Existing[1]	Future[2]	Exising	Future W/O Project	Future W/Project
32 (inbound)	285	310	355	240	285	1.19	1.09	1.25
32 (outbound)	60	65	70	160	190	0.38	0.34	0.37
42 (inbound)	200	720	825	525	625	0.38	1.15	1.32
42 (outbound)	245	390	405	240	285	1.02	1.37	1.42

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[1] Source: Environmental Science Associates, based on data collected January 13 and 20, 1983; San Francisco Municipal Railway, Five-Year Plan, 1982-1987.

[2] Project capacity reflects a 19% increase planned by Muni as per the San Francisco Public Utilities Commission report Fleet Rehabilitation and Replacement Plan, May 1982.

[3] Load factor or V/C ratio equals ratio of patronage volume to seated capacity. A peak hour load factor of 1.50 is deemed the maximum acceptable by Muni, although 1.25-1.4 may represent an optimal load factor.

Consideration has also been given to the systemwide characteristics of Muni's downtown service. Muni's downtown service has current volume and capacity characteristics as outlined in Table 13. With the added patronage from cumulative downtown development (Table 8, page 80) and a projected 19% increase in capacity, the downtown Muni system would experience overcrowded conditions during the peak hour and acceptable (as per Muni standards) average conditions over the peak 2-hour period.

TABLE 13

EXISTING AND PROJECTED P.M. PEAK-HOUR RIDERSHIP CHARACTERISTICS FOR MUNI DOWNTOWN SYSTEM[1]

Volume/Capacity Ratio and (Load Factor[2])

Existing Hour	Existing 2 Hours	Future Hour	Future 2 Hours	Future + Project Hr.	Future + Project 2 Hrs.
27,500/21,500 1.28	49,000/42,000 1.17	39,000/25,500 1.53	66,500/50,000 1.33	39,065/25,500 1.53	66,605/50,000 1.33

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[1] Source: DCP, Guidelines for Environmental Review, July 1983.

[2] Load factor = ratio of patronage volume to seated capacity. A maximum peak-hour load factor of 1.25-1.50 is deemed acceptable by Muni.

b. BART

BART staff have provided p.m. peak-period operating statistics for outbound trains at their peak load points (during October-December 1982).[15]

Cumulative South of Market and downtown development would increase BART ridership by about 8,000 passengers. BART's short-term (5-year) improvement program calls for an approximately 20% increase in capacity (with added cars and some decrease in headways).[15] The proposed Daly City tail track would improve system capacity by an additional 505. With these improvments the East Bay peak hour load factors would average 1.0-1.1 and Daly City load factors would average 0.6-0.7. BART district policy calls for a maximum load factor averaging 1.3 for all trains during the peak hour. The proposed project would have no measurable effect on load factors (Table 14, page 90).

c. AC Transit

AC Transit operates about 200 buses outbound from the Transbay Terminal during the p.m. peak hour.[16] Based on a capacity of 125% of available seating (AC policy accepts 25% standees) and an average of 50 seats per bus, space for 12,500 passengers is available. With a current peak hour patronage of 8,900 during this peak hour, the overall capacity reserve is 3,600. Within the peak hour, certain of the peak runs have higher load factors and therefore capacity may be exceeded at these times.

The proposed project and cumulative development would generate about 2,800 trips, within the 3,600 person capacity reserve.

d. Golden Gate Transit

Golden Gate Transit operates 140 buses from the downtown area during the afternoon peak hour, 20 buses on its Civic Center routes and about 120 buses on Financial District routes.[17] During the peak two-hour period about 250 buses operate.

As outlined in Table 15, page 91, the existing and projected ridership would be within the systems capacity. The projected conditions reflect a District 5-Year Plan which calls for an increase in capacity of up to 25%. The capacity increase would be subject to ridership trends and District needs.

e. SamTrans

There are currently 34 SamTrans buses leaving downtown during the afternoon peak hour and 52 buses during the peak two-hour period.[18] As shown in Table 16, page 91, the projected ridership would increase by 420 peak hour passengers and 620 passengers during the peak two-hour period. Projected ridership would exceed the system's capacity. The District has no specific capacity increases planned for the San Francisco service.

TABLE 14

BART P.M. PEAK PERIOD OPERATING STATISTICS

	East Bay			Daly City		
	Existing	Projected[1] Without Project	Projected[1] With Project	Existing	Projected[1] Without Project	Projected[1] With Project
Seats (Hr./2 Hr.)	9,924/20,136	18,000/36,000	18,000/36,000	6,912/17,964	12,000/24,000	12,000/24,000
Passenger (Hr./2 Hr.)	13,556/24,928	19,000/35,000	19,045/35,070	5,821/10,859	8,000/15,000	8,015/15,025
Average Load Factor (Hr./2 Hr.)	1.37/1.24	1.06/0.97	1.06/0.97	0.84/0.60	0.67/0.63	0.67/0.63

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[1] Projections include capacity increases reflected in BART 5-year plan.

TABLE 15

GOLDEN GATE TRANSIT P.M. PEAK PERIOD OPERATING STATISTICS

	Peak Period (1 hour/2 hour) Statistics		
	Existing	Projected Without Project	Projected With Project
Seats	6,860/12,250	8,575/15,310	8,575/15,310
Passengers	6,620/10,410	8,070/12,605	8,080/12,620
Load Factors[1]	0.97/0.85	0.94/0.82	0.94/0.82

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[1] District policy allows a maximum load factor of 1.25.

TABLE 16

SAMTRANS P.M. PEAK PERIOD OPERATING STATISTICS

	Peak Period (1 hour/2 hour) Statistics		
	Existing	Projected Without Project	Projected With Project
Seats	1,565/2,395	1,565/2,395	1,565/2,395
Passengers	1,565/2,395	1,980/3,005	1,985/3,015
Load Factors[1]	1.00/1.00	1.27/1.25	1.27/1.26

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[1] District policy allows a maximum capacity of 125% of seats, a load factor of 1.25.

f. Southern Pacific

Current services provide six trains with 4,900 seats during the p.m. peak hour and 11 southbound trains with 9,000 seats during the p.m. peak two-hour period.[19] The current load factor (based on seating capacity) is 0.59, or approximately 2,890 passengers during the peak hour and 0.57 (about 5,135 passengers during the two-hour period).

With cumulative development, ridership would increase by about 720 peak hour pasengers and 1,070 passengers during the peak two-hour period. The projected ridership would remain within the system's capacity.

4. Parking Impacts

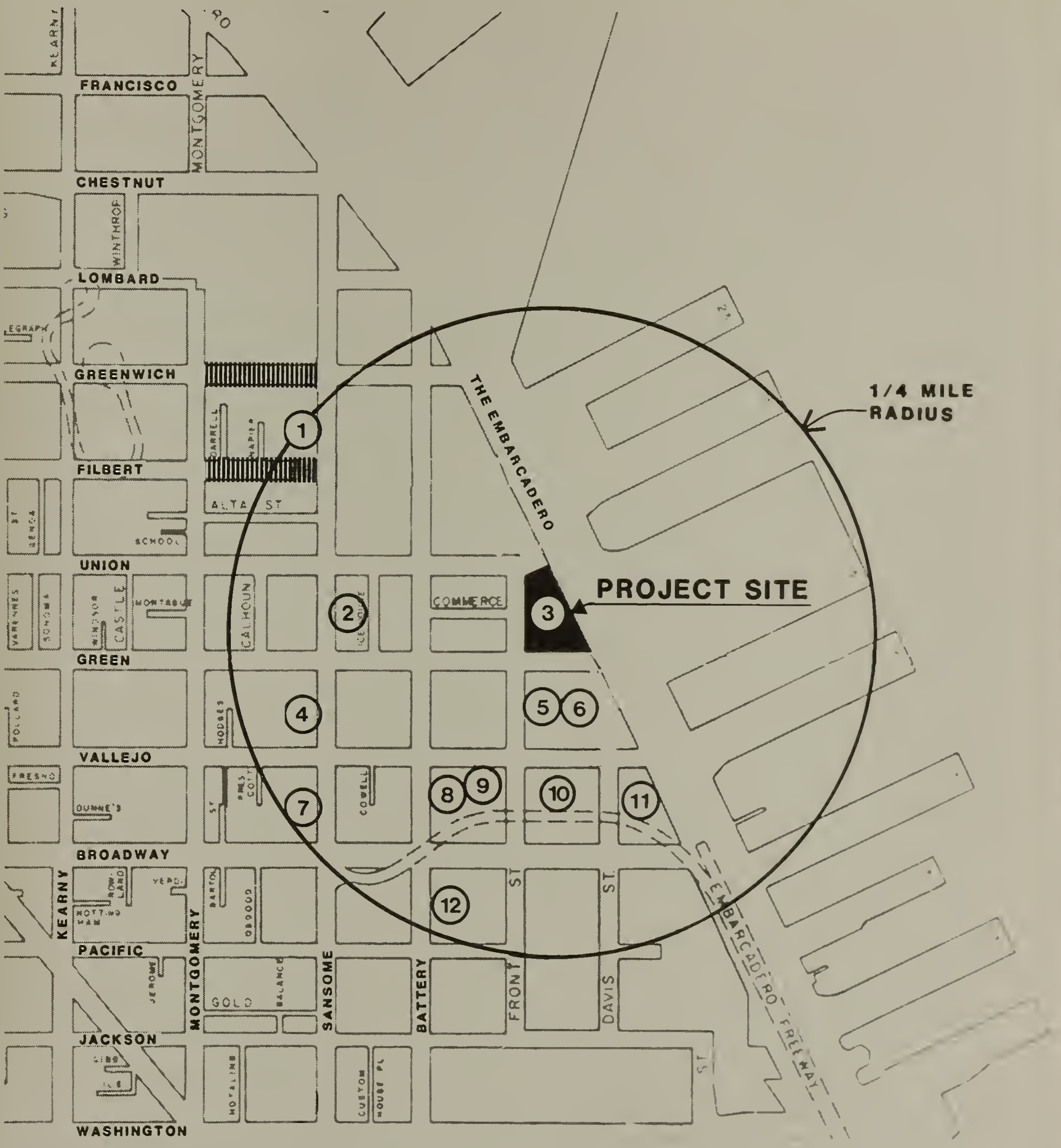
The project's parking demand has been calculated on the basis of trip generation and modal split data. Based upon the project's travel patterns, parking demand would be about 80 spaces, calculated as follows:

- 1,020 work trips x 19% auto/1.4 persons per auto[6]/2 one-way trips per auto = 70 long-term parking spaces per day.

- 1,885 non-work trips x 10% auto/1.4 persons per auto[6]/2 one-way trips per auto/5.7 turnovers daily[6] = 10 short-term parking spaces per day.

With a self-park program, the project's garage would accommodate 50 cars, leaving a deficit of about 30 spaces. With attendant parking, 125 vehicles could be parked on-site, accommodating all of the project demand. The project would also result in the removal of a 304-space surface parking lot.

Within a one-quarter mile walking distance (two-three blocks) of the site there are 12 off-street parking garages and lots containing about 2,250 spaces (Figure 20, page 93). During a mid-day survey, the various lots and garages were 82% filled, with 1,835 spaces occupied and 415 spaces vacant.[20] The project site (included within the overall survey) is a 304-space surface lot which was 99% filled (301 spaces occupied) during the field survey.



SOURCE: EIP

SCALE 0 250 500 1000 FEET

③ PUBLICLY ACCESSIBLE PARKING LOT OR GARAGE

▥ STAIRS

— — BOUNDARY OF PARKING SURVEY

Embarcadero Office Terraces

EXISTING OFF STREET PUBLIC PARKING FACILITIES

20

With the loss of the current parking lot and added parking demand, the parking occupancy (in the area surveyed) would increase from 82% to 96%, virtually saturating the existing parking supply. As parking occupancy approaches saturation it is likely that commuters would be diverted from single occupant auto travel. With the demand, parking rates would increase and parking itself would be less convenient. These factors would make carpools and transit services more attractive. If these diversions from single occupant auto commuting were to occur, the parking demand would probably not reach 100%.

The project would include a single loading dock on Green Street. City Planning Commission policy would require that the project have 0.1 space per 10,000 square feet of gross floor area.[21] The calculation yields a requirement for approximately one off-street loading space. Peak loading demand could exceed the single space capacity. Based on a City study,[22] the peak hour truck activity would be about 25% higher, resulting in a peak demand for one or two spaces. During these periods, a delivery vehicle would either seek curb space or double park on Green Street.

5. Pedestrian Impacts

Pedestrian activity adjacent to the project site is primarily limited to commuters walking to and from the surface parking lot on the site and the parking garage immediately south of the site. Existing pedestrian flows along sidewalks and crossing Front Street were observed to be "open" with virtually no pedestrian conflicts[23] (pedestrian flow definitions are included in Appendix C, page A-46). Pedestrian flows are also concentrated crossing Battery Street. Bus stops for Muni line 42 and Golden Gate Transit routes are located on the west side of Battery Street (for service toward the downtown) and the east side of Sansome Street (for service toward the Embarcadero and North Bay). The crosswalks on Battery Street were observed during the p.m. peak hour.[23] The pedestrian flows are open throughout the peak hour and during the peak five-minute period of the hour.

The project would generate about 200 to 250 p.m. peak hour pedestrian trips (dependent upon the amount of on-site parking provided as part of the project). Of this total, about 100 to 150 would be destined to the Muni and Golden Gate Transit bus stops west of Battery Street. An additional 50 pedestrians could travel from the 955 Front Street project to these stops. If all of these pedestrians crossed Battery at the signalized mid-block crossing these pedestrian flows would generally remain "open" during the peak hour but could degrade slightly to "unimpeded" during peak five-minute periods.

Both the existing and projected pedestrian flow conditions are outlined in Figure 21, page 96.

6. Construction Impacts

The project would be constructed over an 18-month period, employing between 80 and 110 employees at any one time during construction.[24] If construction employees exhibited the same travel characteristics as other downtown employees, up to 15-20 auto trips would be generated during the p.m. peak hour. These trips would not change traffic service levels on the adjacent street network. The 15-20 construction employees vehicles could be accommodated in existing parking lots and garages in the project area.

It would be tenuous to predict specific truck activity associated with the project construction. It is likely that truck travel would be greatest during either the basement excavation or concrete placement. It is estimated that peak activity would not exceed 50 trucks daily with fewer than five trucks during the p.m. peak hour.[25] This truck activity would add less than one percent to streets such as Battery and Sansome and the traffic flow characteristics would not degrade as a result of the truck travel. During excavation and concrete placement, trucks would probably queue on Front Street and these back-ups could temporarily disrupt through traffic.

Immediately adjacent to the site, traffic and pedestrian flows are light along Union, Front and Green Streets.[19,20] To the extent that construction activity would encroach onto sidewalk areas, pedestrian flows would be disrupted. This activity could also temporarily block portions of the adjacent streets. However, it is not projected that this disruption would cause vehicle service levels (on Union, Front and Green Streets) to degrade below stable conditions (service level C or better), or cause pedestrian flows to change from open to unimpeded.

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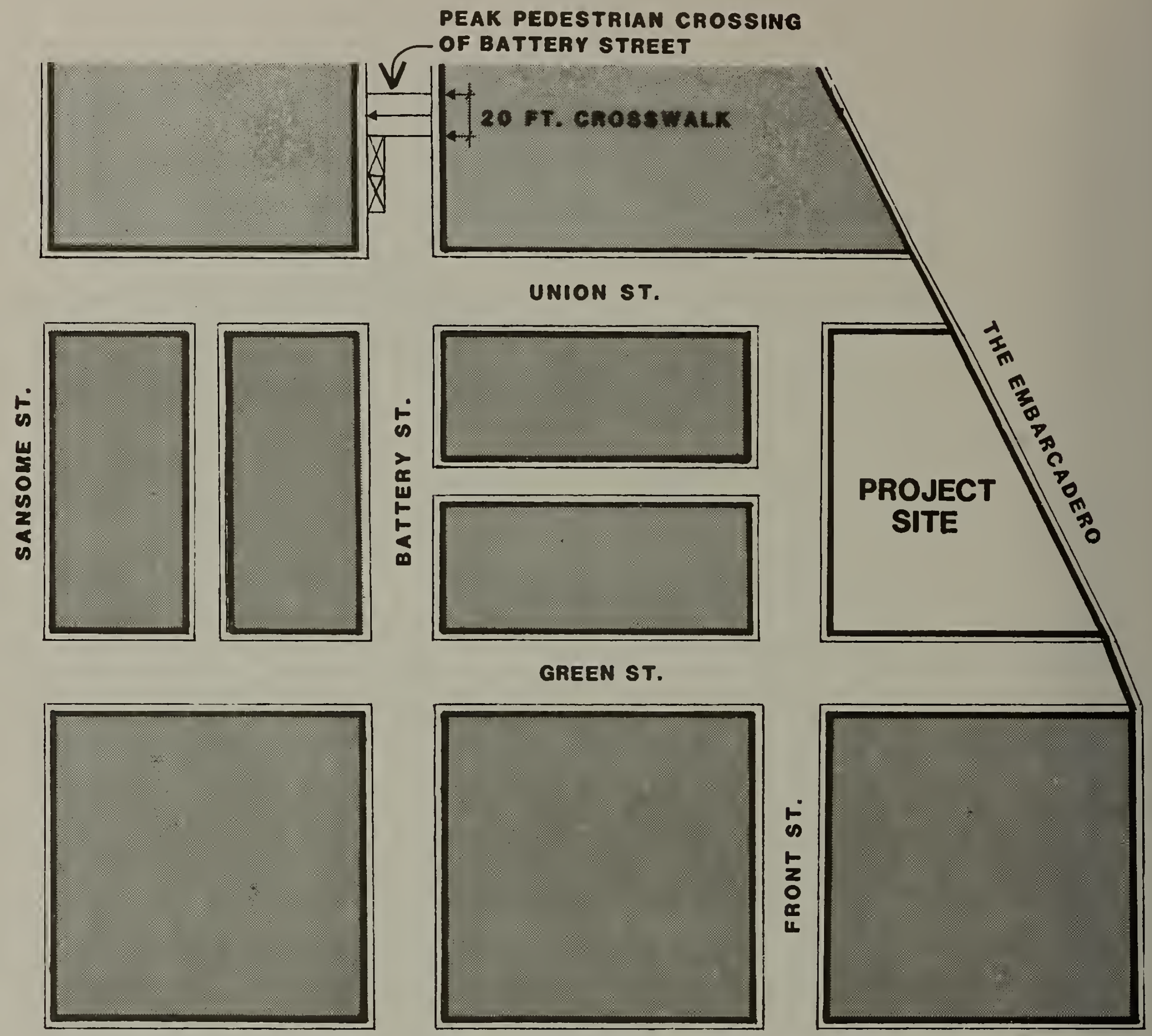
[1] San Francisco Department of City Planning, Guidelines for Environmental Review (Transportation Impacts), July 1983.

[2] Caltrans, Eleventh Progress Report on Trip Ends Generation, July 1980, page 171.



TWO-WAY FLOW RATES AND CONDITIONS AT PEAK BATTERY ST. CROSSING

EXISTING	WITH PROJECT
PEAK HOUR AVERAGE=0.26 PERSONS/ MINUTE/FT. OF CROSSWALK WIDTH 'OPEN' FLOW	PEAK HOUR AVERAGE=0.43 PERSONS/ MINUTE/FT. OF CROSSWALK WIDTH 'OPEN' FLOW
PEAK 5 MIN. PERIOD=0.41 PERSONS/ MINUTE/FT. OF CROSSWALKWIDTH 'OPEN' FLOW	PEAK 5 MIN. PERIOD=0.68 PERSONS/ MINUTE/FT. OF CROSSWALK WIDTH 'UNIMPEDED' FLOW

☒ MUNI AND GOLDEN GATE BUS STOPS

SOURCE: EIP

NOT TO SCALE

Embarcadero Office Terraces

EXISTING AND PROJECTED PEDESTRIAN FLOW CONDITIONS DURING PM PEAK

21

[3] Cumulative projects approved or under formal review are listed in Appendix F, Table F-1, page A-63.

[4] San Francisco Department of City Planning, Downtown Transportation Improvement Project Working Paper I -Projection of Long-Range Transportation Demand, May 1982.

[5] Survey conducted by EIP on June 16, 1982. Survey of two restaurants in project area indicates about 75% of travel is pedestrian with remainder evenly split between auto and Muni.

[6] National Cooperative Highway Research Program, Urban Travel Patterns for Hospitals, Universities, Office Buildings and Capitals, Report No. 62, 1969.

[7] Counts conducted by EIP Corporation on Thursday May 6, 1982.

[8] Nelson Wong, Associate Engineer, Traffic Engineering Division, San Francisco Department of Public Works, telephone conversation, May 5, 1982.

[9] Scott MacCalden, Senior Engineer, Highway Operation Branch, Caltrans, telephone conversation December 28, 1981.

[10] San Francisco Department of Public Works, 1983: Downtown Cordon Count, 1983.

[11] Bond Yee, San Francisco Department of Public Works, telephone conversation, August 31, 1983.

[12] San Francisco Department of Public Works, Bureau of Engineering, "Proposed Embarcadero Roadway" plans, File STR 6066.

[13] A. Figone, Muni Schedules Department, telephone conversation, May 27, 1982.

[14] San Francisco PUC, Fleet Rehabilitation and Replacement Plan, May 1982.

[15] John Stamas, Planner, BART, personal communication, February 1983.

[16] Jeff Allen, AC Transit Planning Staff, telephone conversation, August 4, 1983.

[17] Alan Zahradnik, Planner, Golden Gate Transit, telephone conversation, August 4, 1983.

[18] Jim Dehart, SamTrans staff, telephone conversation, August 9, 1983.

[19] Ben Chuck, Senior Transportation Planner, Caltrans, telephone conversation, August 4, 1983.

[20] Field review by EIP Corporation on Thursday, May 13, 1982.

[21] Guidelines adopted by San Francisco Planning Commission on January 21, 1982, described in Resolution No. 9286; guidelines based on findings in the San Francisco Center City Pedestrian Circulation and Goods Movement Study, September 1980, Wilbur Smith and Associates.

[22] Wilbur Smith and Associates, San Francisco Center City Pedestrian Circulation and Goods Movement Study, September 1980, page 73.

[23] Field review by EIP Corporation on Thursday, May 20, 1982.

[24] Estimate by George W. Nickelson, EIP traffic engineer, based upon project construction costs.

[25] Estimate by George W. Nickelson, EIP Corporation.

G. AIR QUALITY AND CLIMATE

1. Air Quality

Construction activities would generate pollutants in the vicinity of the project. Trucks and equipment would release exhausts; earthmoving and grading would generate dust and suspended particulates. Adequate information to quantify the generation of dust is not available since estimates of particulate emission rates[1] were developed for shopping center and housing construction in suburban desert areas and have little applicability to downtown urban construction. However, it is likely that dust generation due to construction would increase dust fall and soiling in local downwind areas.

Direct atmospheric emissions of primarily carbon monoxide from the project would be from combustion of natural gas for water and space heating. Natural gas is a relatively clean-burning fuel; therefore, no visible fumes would occur. Exhaust gases would be emitted at rooftop level and would be diluted to concentrations below the ambient air quality standards before reaching ground level.

The project would act as an indirect source of atmospheric emissions by generating automobile traffic. On the local scale, carbon monoxide (CO) is the most important pollutant emitted by automobiles. Projected carbon monoxide concentrations for existing conditions near the site, with the project and other anticipated projects, were calculated using traffic volumes presented in the Transportation Impacts Section IV.F., page 78.

Details of the air quality model are contained in Appendix H, page A-75. Results for worst-case meteorological conditions are summarized in Table 17, page 100. These concentrations represent the exposure a person would experience at curbside. Carbon monoxide levels would drop off rapidly with distance from curbside. No sensitive receptors were identified in the project vicinity.

Table 17, page 100, shows that worst case one-hour average CO concentrations under existing conditions are in compliance with the state standard of 20 parts per million (ppm). However, the state eight-hour average standard of nine ppm is predicted to be violated under worst case conditions at Broadway/Sansome and Broadway/Battery in 1982 At Broadway/Battery the standard would be equalled, but not exceeded. The individual contribution of the proposed project would be sufficiently small that it would not alter the predicted CO concentrations.

TABLE 17

CURBSIDE CARBON MONOXIDE CONCENTRATIONS UNDER WORST-CASE CONDITIONS (in parts per million)

	Existing (1982)		Without Project but with Other Development (1990)		Project and Other Development (1990)	
Intersection	1-hr.	8-hr.	1-hr.	8-hr.	1-hr.	8-hr.
Broadway/Battery	16.	9.	11.	6.	11.	6.
Broadway/Sansome	17.	9.	12.	6.	12.	6.
Background	7.0	5.3	4.8	3.7	4.8	3.7

The air quality estimates in Table 17 account for the reductions in average tailpipe emissions expected as a result of state and federal emissions control regulations. The calculations include a 10% increment in traffic projected as a result of cumulative development in San Francisco. The air quality improvements due to the expected reduction in exhaust emissions would be greater than amount of deterioration due to the projected increase in traffic from cumulative development. Therefore, future air quality at Broadway/Battery and Broadway/Sansome would be better than current air quality.

The regional impact of the project would be due to the increase in vehicle miles traveled (VMT) associated with the project. Based upon the estimate of project trip generation and destination, the daily regional increase of VMT is estimated at 6,160. Using composite emission factors supplied by the California Air Resources Board and assuming an average trip speed of 20 mph, total regional emissions from the project traffic have been estimated in Table 18, page 101. No measurable impact on regional air quality would be expected due to the relatively small quantities of pollutants which would be generated by the project in comparison with regional totals.

TABLE 18

REGIONAL AUTOMOBILE EMISSIONS (in tons per day)[1]

Pollutant	1990 Project Emissions	1990 Regional Emissions	% increase in 1990 Regional Emissions Due To Project
Carbon Monoxide	.16	2,300	.001
Hydrocarbons	.01	530	.002
Oxides of Nitrogen	.01	560	.002

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[1] Based upon an increase of 6,200 vehicle miles traveled per day.

The projected increase in emissions due to cumulative development to the time of project occupancy would result in degradation of regional air quality. Of particular importance are the increases in hydrocarbons and oxides of nitrogen which result in the formation of ozone. Studies of future Bay Area air quality[2] indicate that photochemical ozone would be a persistent problem in the future, and that reductions in hydrocarbon and oxides of nitrogen emissions would be necessary to attain the federal standard for ozone in the Bay Area. The proposed project's emissions would represent a maximum increase of 0.002% in regional emissions of ozone precursors (see Table 18, above). Photochemical oxidant modeling conducted for the proposed Yerba Buena Center Redevelopment Project (YBC) showed that the emissions from the YBC project would result in no measurable change in Bay Area ozone concentrations. The regional emissions for the proposed project would be less than three precent of those for the Yerba Buena project; therefore, no measurable effect on regional ozone concentrations would be anticipated. Cumulative development in San Francisco and the Bay Area could, however, affect regional air quality.

The proposed project would be consistent with the growth projections for San Francisco which were incorporated into the 1979 Bay Area Air Quality Plan. The project would not conflict with the specific transportation control measures contained in the Plan; to that extent, it would be consistent with the Plan. However, since the project would contribute to the overall burden of emissions in the region, it would impede progress toward achievement of air quality goals, even though the individual effect of the project would not be measurable. Cumulative development, however, could measurably increase air pollution concentrations in some locations.

The California Health and Safety Code requires that measures be taken to minimize dust generation, specifically, watering of demolition materials and soils. An effective watering program (complete coverage twice daily) can reduce emissions by about 50%. The project sponsor would require the contractor to implement a twice-daily watering program, which would reduce airborne construction dust and particulates by about 50% and reduce the likelihood of exceeding the state and federal standards.

2. Climate

The potential for adverse wind accelerations at ground level is determined by two factors: site exposure and design. In San Francisco, buildings that are known to cause uncomfortable wind conditions have the following characteristics:

- buildings are freestanding and exposed to prevailing winds
- buildings have wide, continuous faces
- height of the building extends well above surrounding buildings

The proposed project does not have any of these characteristics and does not appear to have the potential to cause adverse wind impacts at the pedestrian level.[4]

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[1] U.S. Environmental Protection Agency, Office of Air and Waste Mangement, Office of Air Quality Planning and Standards, Compilation of Air Pollutant Emission Factors, Second Edition, Research Triangle Park, North Carolina, February 1976.

[2] Association of Bay Area Governments, 1979 Bay Area Air Quality Plan, Berkeley, January 1979.

[3] San Francisco Department of City Planning and San Francisco Redevelopment Agency, Final Environmental Impact Report, Yerba Buena Center, (EE 81.27), certified April 1978.

[4] Don Ballanti, Certified Consulting Meteorologist, letter, September 2, 1983. Full text of letter appears in Appendix H, page A-78.

H. NOISE

The acoustic environment of the project is dominated by traffic noise from The Embarcadero on the northeast side of the site. The Environmental Protection Element of the San Francisco Comprehensive Plan[1] indicates that noise levels along The Embarcadero are Ldn 75 dBA.[2] In the future the acoustic environment of the project will continue to be dominated by traffic noise; however, the projected 30% increase in traffic volumes would not audibly increase Ldn noise levels.

Construction Noise Impacts. Construction of the proposed project would take place over approximately 18 months and would encompass three phases: foundation excavation, foundation construction, and building erection. Construction noise levels would fluctuate depending upon the following variables: phase of construction; duration; type of equipment used during each phase; noise emitted during the noisy mode of any particular equipment in use; duration of use of equipment (hours); distance between the noise source and the receptor; and the noise propagation characteristics of the path between the noise source and the receptor (i.e. shielding by barriers or intervening buildings results in a reduced noise level at the receptor). In order to estimate possible construction noise impacts, this EIR assumes typical equipment and construction techniques.

During foundation excavation, bulldozers, graders, haul trucks and front end loaders would be expected on the project site. These pieces of equipment generate from 70 to 85 dBA at 50 feet. During foundation construction, the major noise sources would be concrete pumping trucks and pile drivers. Concrete pumping trucks generate noise levels of up to about 85 dBA at 50 feet; pile drivers generate up to about 105 dBA at 50 feet. After foundation construction concrete pumpers, power saws, cranes, air compressors, generators, and impact torque wrenches would be the major noise sources. These pieces of equipment emit from 70 to 95 dBA at 50 feet. During building erection, the noisiest single activity would be the use of impact wrenches to fasten shear connectors and metal decking to the steel frame. Impact wrenches emit about 95 dBA at a distance of 50 feet. Typically impact wrenches are used sporadically over a period of two months during the building erection phase.

Construction noise in the City and County of San Francisco is controlled by Ordinance 274-72, Regulation of Noise, Section 2907. The ordinance requires that all powered construction equipment except impact tools and equipment emit not more than 80 dBA measured at 100 feet (86 dBA at 50 feet). The use of mufflers and acoustical shrouds on all impact tools and equipment, as provided by the manufacturer, is required by Police Code Section 2907. The ordinance prohibits construction work from 8 p.m. to 7 a.m. if noise from such work exceeds the ambient noise levels by 5 dBA at the property line, unless a special permit is authorized by the Department of Public Works.

The buildings closest to the proposed site are various office and commercial spaces. About 70 feet to the west across Front Street between Commerce and Green is a retail/office building with operable windows (S. Christian of Copenhagen). Between Commerce and Union there is a brick building containing parking and warehouse uses with a blank wall facing the project site (Pacific Telephone and Telegraph). North of Union and west of Front (about 100 feet away) is Levi's Plaza containing office, restaurant and retail space with fixed windows. Recreational open space areas associated with Levi's Plaza are used during weekdays by office workers on their lunch breaks. A large popular open space area of Levi's Plaza is located one block from the project site along the west side of The Embarcadero, south of Greenwich Street. Directly southwest of the site (about 100 feet) is the location of the proposed 955 Front Street office building under formal review. Across Green (about 70 feet) to the south is the 900 Front Street office building with fixed windows. Across The Embarcadero, to the east (about 100 feet) are some commercial and office spaces and the Star Terminal. The nearest residential uses identified were the 101 Lombard Condominiums currently under construction north of Lombard Street and east of Sansome Street, nearly 1,000 feet from the site. North of Union and east of Front Street is a small grassy open space area.

During pile driving operations, the impacts would be most severe in the office and commercial spaces across Front Street where interior noise levels would reach 87 dBA with windows open and 77 dBA with windows closed. In the 900 Front Street building south of Green Street, interior noise levels would reach 72 dBA. If constructed, noise levels inside the 955 Front building would reach 84 dBA with windows open and 74 dBA with windows closed; levels in spaces across The Embarcadero would be similar. At Levi's Plaza noise levels would reach about 84 dBA in the small open space area north of Union Street; noise levels at the larger plaza area near Greenwich Street would reach 70-80 dBA, depending upon the location. Noise levels during pile driving at the nearest residences on Telegraph Hill would reach about 58 dBA with windows open and 48 dBA with windows closed; this would be audible and would annoy residents in rooms with open windows facing the project site. During concrete pouring and framing operations, these levels would be about 10 dBA lower.

In those offices where interior levels would exceed 70 dBA, workers would find it difficult to concentrate or use the telephone. Noise levels at the smaller open space area of Levi's Plaza would be very annoying during pile driving and other noisy construction operations. Noise levels at locations nearest the project in the larger open space area of Levi's Plaza would be annoying during pile driving, but would not be especially distracting during other construction operations. Noise levels would be lower during the construction workers' lunch hour, when Levi's Plaza receives heavy use. At noise levels between 60 and 70 dBA office workers would be annoyed and distracted, but noise levels would not interfere with telephone use.

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[1] City and County of San Francisco, Department of City Planning, The Comprehensive Plan, Environmental Protection Element, San Francisco, 1974.

[2] Decibel: (dB) A logarithmic unit of sound energy intensity. Sound waves, traveling outward from a source, exert a force known as sound pressure level (commonly called "sound level"), measured in decibels.

dBA: Decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels.

L_{dn}: An averaged sound level measurement, based on human reaction to cumulative noise exposure over a 24-hour period, which takes into account the greater annoyance of nighttime noises. Noise between 10 p.m. and 7 a.m. is weighted 10 dBA higher than daytime noise

A complete discussion of fundamental concepts of environmental noise is found in Appendix D, page A-48.

I. ENERGY

The proposed site is now used as a parking lot and there are no structures within which energy beyond lighting is consumed. The proposed project is subject to Title 24 of the California Administrative Code which promulgates energy conservation standards for the design and construction of buildings. The specific applicable regulations[1] were adopted by the California Energy Resources Conservation and Development Commission, June 30, 1977, effective January 1, 1978. A new version of these standards is in preparation and is expected to be adopted sometime in 1983.

The regulations set standards governing the design and construction of new building envelope: heating, ventilating and air conditioning systems, service water heating, electrical distribution and lighting. The requirements of the standards must be satisfied in one of three ways:

- The energy budget method, which requires that the energy consumption of the proposed building be calculated using a state approved energy analysis computer program and then compared to an allowable limit.
- The component performance standards method, which requires the incorporation of a set of specific design features.
- The use of nondepletable energy resources (energy from nondepletable sources, such as solar or wind energy, is not counted aginst the allowable energy budget).

The documentation of compliance with these standards is submitted with the application for the building permit.

At this stage in the design of the proposed project there is insufficient information upon which to base energy analysis calculations. In lieu of that, estimates of the likely energy consumption of the proposed project were based upon the upper limit allowed by Title 24. The portions allocated to electricity and natural gas are based upon estimates for other buildings. The resulting estimates are shown in Table 19, page 107.

TABLE 19

ESTIMATES OF ENERGY CONSUMPTION FOR THE PROPOSED PROJECT[1,2]

Connected Kilowatt Load	1,100 KW
Maximum allowable annual BTU for office space (Title 24)	126,000 BTU per square foot per year
Maximum allowable annual BTU for restaurant space (Title 24)	131,000 BTU per square foot per year
Estimated monthly electric consumption	165,000 kilowatt hours (Kwh) per month (.88 Kwh per square foot per month)
Estimated average consumption of fossil fuels	35.0 BTU per square foot per day
Estimated peak consumption of fossil fuels	7.0 BTU per square foot per day
Estimated annual energy consumption for Title 24 regulated uses	122,000 BTU per square foot
Estimated total annual average energy use	18 billion BTU, equivalent to about 3,200 barrels of oil

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[1] Includes space conditioning, service water heating and lighting. Energy used by applicances such as typewriters, computers, coffee makers, etc. is not included because of the large variability based upon the uses of specific occupants.

[2] It is likely that the actual structure would use less energy than shown here because these figures are based upon the maximum allowable limit under Title 24 of the California Administrative Code.

Daily and annual load distribution curves are not estimable at this time due to the unavailability of design information. Since load curves are not governed by Title 24, no plausible assumptions can be made. However, similar projects in San Francisco for which load curves have been developed show peak electrical consumption on hot August or September afternoons due to demand for cooling, which coincides with PG&E's system-wide peak. Natural gas demand of other projects has been predicted to peak during cold January mornings, which does not coincide with the system-wide peak which occurs during winter evening hours, most often in January. The load curves for the proposed project would be similar in shape to those shown in Figures 23 and 24, pages 109 and 110.

Project-generated traffic would consume about 105,000 gallons of gasoline annually, equivalent to about 2,300 barrels of oil.

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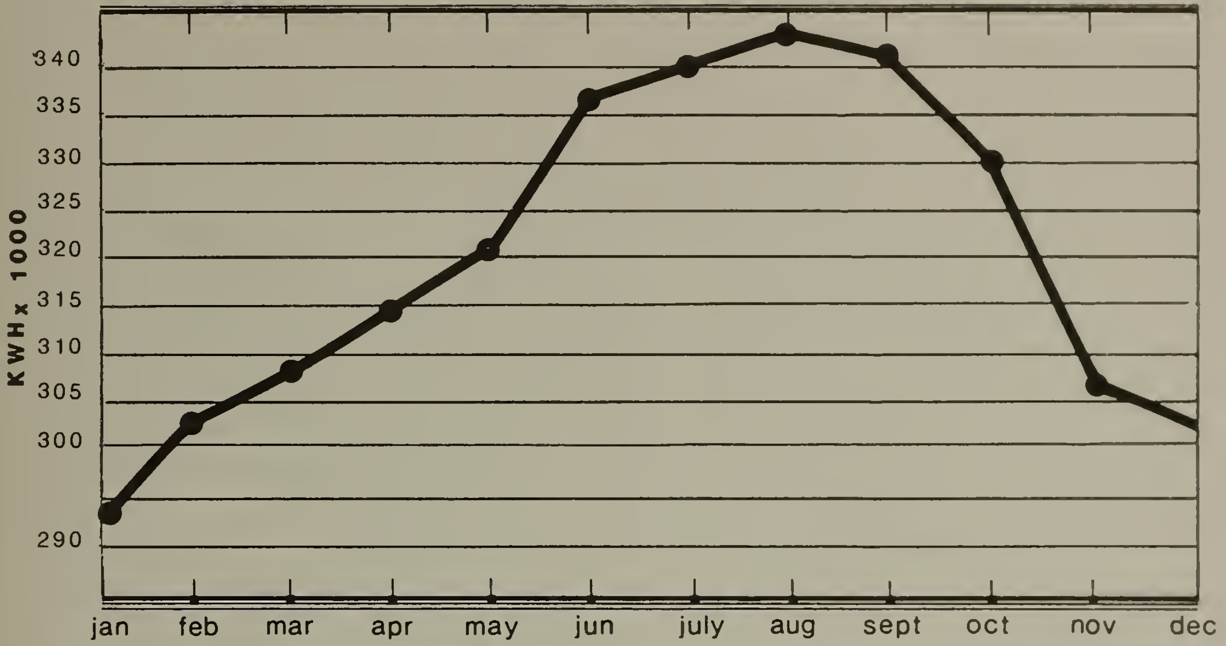
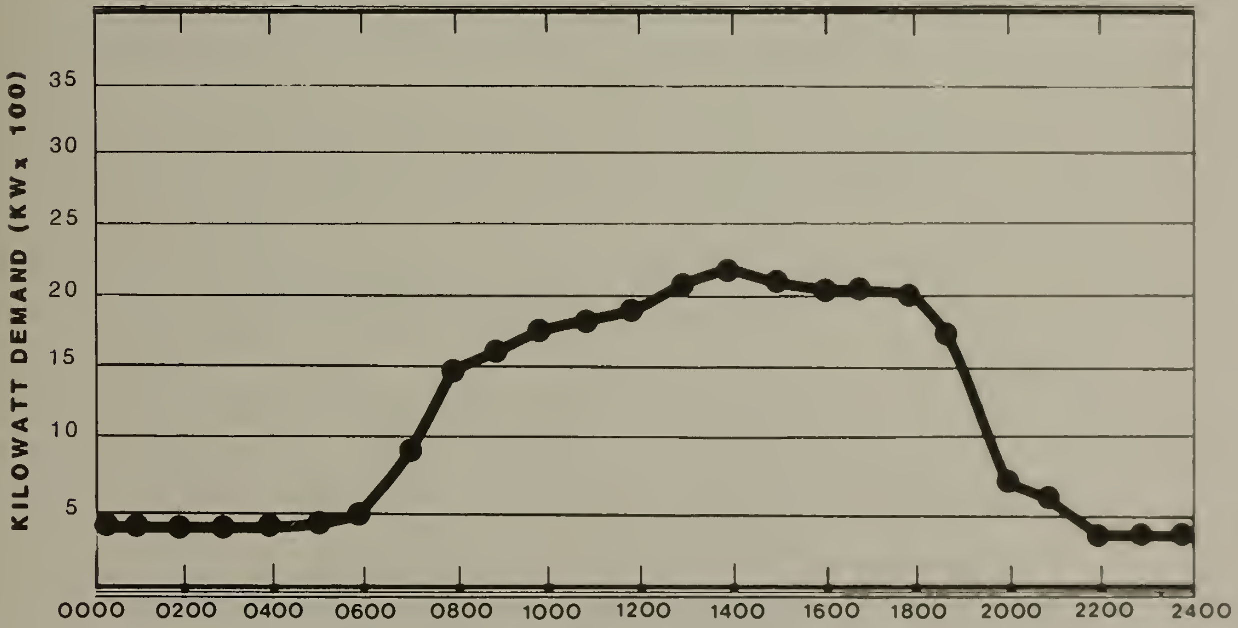
[1] State of California, Energy Resources Conservation and Development Commission, Conservation Division, Energy Conservation Design Manual for New Nonresidential Buildings, Sacramento, California, October 1977. This document describes the allowable energy limits and design strategies.



MONTHLY CONSUMPTION



HOURLY CONSUMPTION

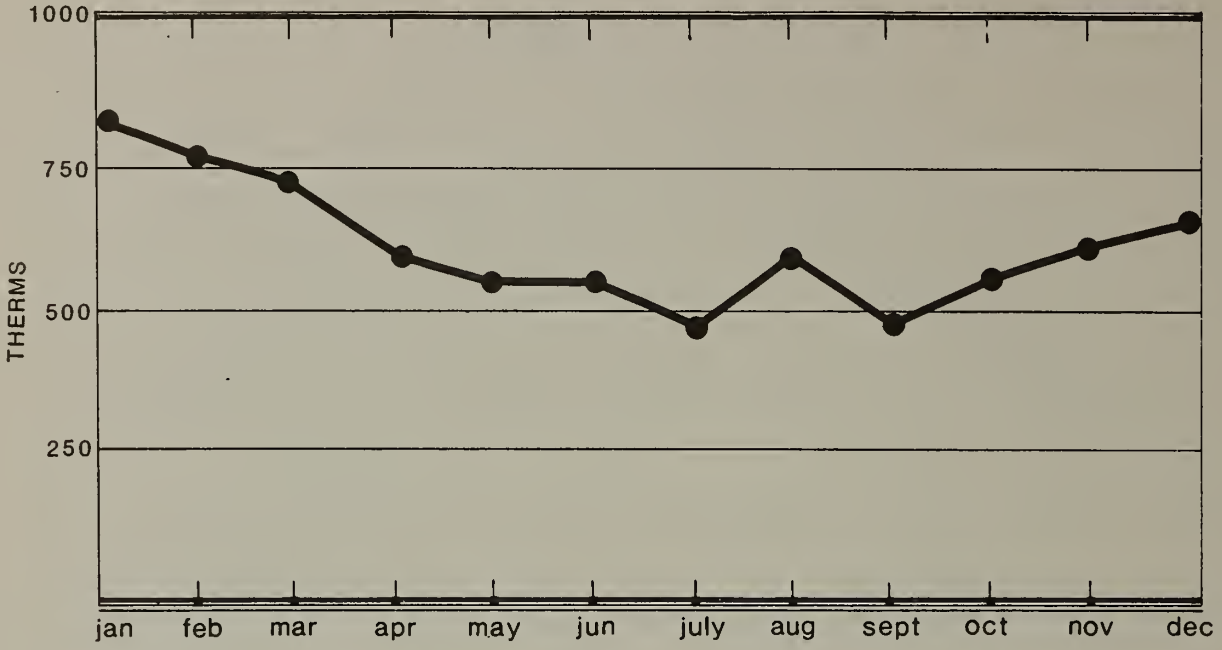
SOURCE: DEPARTMENT OF CITY PLANNING, City and County of San Francisco, Final EIR, 315 Howard Street Office Building, Certified August 21, 1980

These figures are typical of electrical consumption patterns in San Francisco insofar as monthly consumption patterns vary based largely upon outside temperature and hourly consumption varies with occupancy rates.

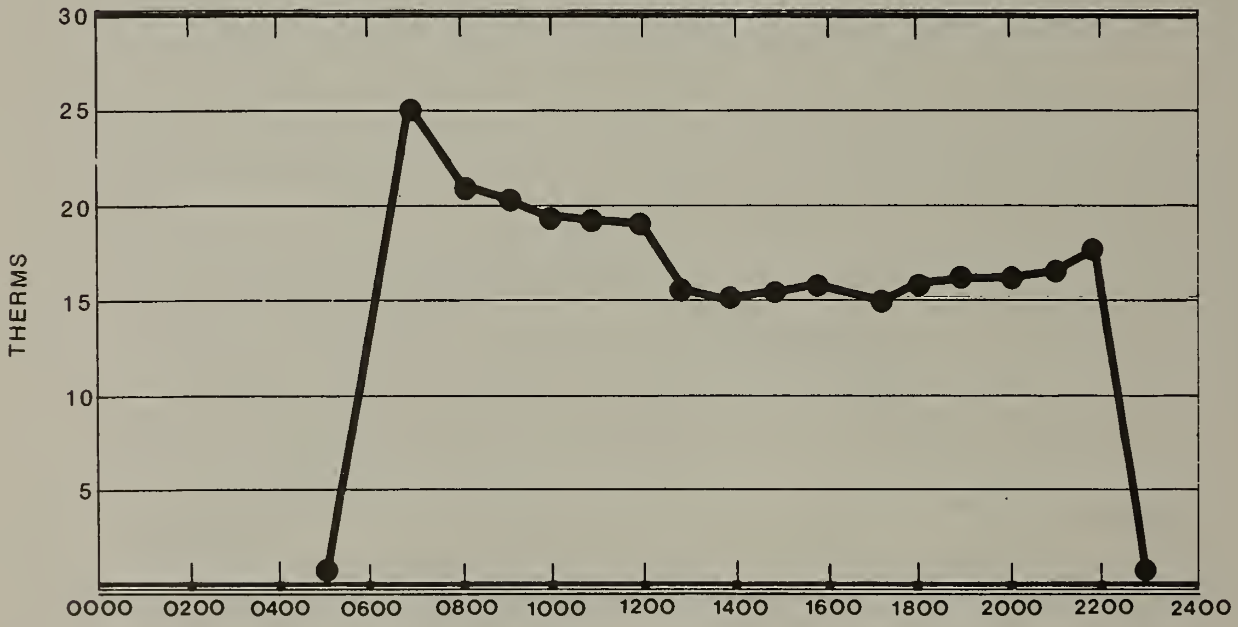
Embarcadero
Office Terraces

ESTIMATED ELECTRICAL CONSUMPTION

22



MONTHLY CONSUMPTION



HOURLY CONSUMPTION

SOURCE: DEPARTMENT OF CITY PLANNING FEIR,
Spear and Main Street Office Building, San Francisco, May 1982

Embarcadero Office Terraces

TYPICAL GAS CONSUMPTION

23

J. GEOLOGY, HYDROLOGY AND SEISMICITY

The project site would be excavated to about 18 feet below street level.[1] This would produce about 40,000 tons of artifical fill (sand, silt, clay and man-made rubble) to be removed from the site. Site spoils would be transported by the shortest possible route to Highway 101 (probably via Green, Battery, Pacific and Sansome Streets to Highway 480) and then to a disposal site, as yet undesignated, south of the City.[2] Spillage of sandy materials from the trucks along the haul routes could create a safety hazard for two-wheeled vehicles, could be a source of windblown dust and could cause siltation of City storm drains.

The base of the excavation would be about 12 feet below the water table. The foundation engineer has recommended that the groundwater level not be lowered during construction due to the possibility of causing settlement of adjacent streets or deterioration of nearby wooden piles that support structures.[3] To avoid lowering the water table, the contractor would build a series of cofferdams[4] as construction proceeded across the site. Sump pumps would be used to keep the pit clear of water. The amount of water to be pumped during the construction period could not be determined until completion of further well tests. Cofferdams are routinely used on Port of San Francisco land for this type of construction. Review of the use of cofferdams is made by the Port's Engineering Department during the Port's building permit approval process. The Port's Engineering Department is aware of the project sponsor's plan to use cofferdam construction techniques.[5] A siltation basin/filter system would be used to avoid adding sediment to the City storm drain system.[2]

There is no surface water at the site. The property is nearly impervious, covered by the existing asphalt parking lot. The proposed construction would add about 2,500 square feet of landscaped surface (less than one percent of the site). Stormwater would continue to drain from the site into the City's combined drain/sewer system rather than to the water table.[1] Water use would increase from zero to about 17,000 gallons per day after full building occupancy. Stormwater runoff could be controlled and no problems are anticipated in meeting the increased wastewater handling requirements.[6]

Construction over Bay Mud requires special engineering considerations. As foundation support Upper Bay Mud is low quality material.[7] The capability of Bay Mud to support loads such as office buildings depends on the speed of loading as well as total weight of the load. If loading is applied too rapidly, or is too great, excessive water pressure develops within these highly impermeable sediments, causing a loss of sheer strength and consequent soil failure. When the mud shifts, the load settles or lurches. If plastic flow occurs, the mud bulges around the load as the load sinks.[7]

Since the Bay Mud under the project site has stabilized with respect to the existing fill, any future loading impacts would come from new structures placed on the site. Even under ideal conditions, approximately 30 years would be required for the mud to restabilize. The impacts of building over unstabilized mud would be reduced at this site by setting piles into bedrock to support the structure, as proposed.[8]

Construction in unengineered fill is complicated by generally unstable and free-running[9] soil conditions. Artificial fill dumped as early as 1850 in the vicinity of the proejct site consists of seven to 20 feet of loose soil (sand, silt and clay), brick, wood and other man-made rubble.[3] There is no way to predict precisely the future behavior of such material; however, differential settlement is inevitable, when placed under load, as the fill compresses and the underlying Bay Mud shifts laterally.[8] Pit wall stability in unengineered fill is usually low because the material is uncemented and lies near or below the water table. Unengineered fill is generally unsuitable for foundations because of its poor to fair seismic stability and highly variable supporting capabilities.[8] Pit walls would be supported to prevent lateral shift of adjacent fill and resultant settlement of nearby streets during project construction. The impacts of supporting the proposed structure on unengineered fill would be reduced by setting piles into more stable material below the Upper Bay Mud. During construction the building contractor would be required to comply with Section 2903 of the San Francisco Building Code and with the Excavation Standards of the California Occupational Safety and Health Agency.

The Upper Bay Mud probably rests on the Colma Formation[10] sand and clay. This is a nearly incompressible esturine and coastal deposit of moderate to high strength which can be used to support building piles.[11]

The Franciscan bedrock below the Colma Formation is fractured shale and sandstone. It has been broadly deformed but there is no evidence of either ancient or modern faulting in the vicinity of the project site. The rock is quite stable and strong in fresh cuts; in thoroughly sheared rock, stability is moderate.[11]

The project sponsor proposes to use piles as foundation support for the building. Thus, the building would not depend on artificial fill or Upper Bay Mud for support because the piles would penetrate to more stable materials, and therefore would not be subject to the densification and liquefaction hazards associated with fill during earthquakes. Final foundation design would occur after completion of the soils investigations by a California-registered geotechnical engineer. The project sponsor would follow the recommendations of these investigations for excavation and construction at the site. The building would be required to meet the specifications of the San Francisco Building Code for seismic design concerning the amount of allowable sway, attachment of partitions and decorative elements, and provision of emergency electricity and water services. Preconstruction surveys would be made to establish the potential effects of vibration from pile driving. A vibration monitoring program would be maintained throughout the pile driving phase of construction.[1] Vibrations would be felt in near by buildings during the penetration of near-surface soils. Since piledriving vibrations die out within a few hundred feet of the pile location no impacts would occur at Telegraph Hill, the base of which is more than 1,000 feet from the project site.[12]

The site of the proposed project would suffer at least "very strong" groundshaking during an earthquake of Richter magnitude 6 or greater occurring along the San Andreas or Hayward Faults.[13] Major on-site impacts related to such a seismic event within the anticipated useful lifetime of the proposed structure (at least 50 years) would include liquefaction,[14] densification[15] and lateral spreading.[16]

Estimates of "violent" intensity of groundshaking are based on potential earthquakes similar to that of the 1906 San Francisco earthquake.[17] For planning purposes, it is reasonable to assume a 59 to 105-year return period for this magnitude of earthquake.[18] The project area is in a seismically active region which annually experiences low to moderate magnitude earthquakes epicentered within the major fault zones. In 1979, a moderate earthquake (Richter magnitude 4.2) occurred along the San Andreas Fault and two moderate earthquakes (Richter magnitudes 4.8 and 5.9) occurred along the Calaveras Fault.[19] Three earthquakes of Richter magnitude 5.5 to 5.9 occurred along the Calaveras Fault in 1980.[20] Based on records of previous earthquakes, the groundshaking at the site during a seismic event the size of the 1906 San Francisco earthquake (Richter magnitude 8.3) would be "violent" involving collapse of unsupported masonry and brick work. Serious cracking would occur in well-constructed buildings and some ground failures such as liquefaction, densification or lateral spreading would also occur. These ground failures could cause tilting or sinking of supported structures. Nonstructural elements, such as bookcases, free-standing wall partitions, hung ceilings or hanging light fixtures, and mechanical equipment could become hazards during a major earthquake if not properly secured to prevent falling. The building would be designed to meet the seismic standards of the San Francisco Building Code, thus reducing these direct hazards to persons.

Tsunamis,[21] or great sea waves, can be generated by any large-scale, short-duration disturbance of the ocean floor. An undersea earthquake of Richter magnitude greater than 6.5 which occurs less than 32 miles below the sea floor is capable of causing a tsunami. Earthquakes caused by faults which principally experience horizontal movement, such as the faults offshore of the San Francisco Bay area, are not considered likely to produce tsunamis. Tsunamis from distant sources usually produce a rapidly rising tide (rather than a great wave) along the coast of California.[22] Consequently, the site of the proposed project would be in greater danger from flooding than from the impact force of a great wave.

Seiches[23] are periodic oscillations in lakes or bays caused by a disruption of their normal boundaries. Undersea earthquakes, tsunamis or major landslides into San Francisco Bay could produce a seiche effect in the bay. As with tsunamis, the greater danger at the project site would be flooding rather than wave impact force.

The maximum projected runups (rise in water level) at the project site would be 6.1 feet for the 100-year event[24] and 11.0 feet for the 500-year event.[25] If these occurred during high tide each runup would be commensurately higher. At the site of the proposed project, a worst-case situation would result in about 2.5 feet of flooding during the 500-year event. This would not be likely to occur as the result of a local earthquake. Therefore, it is unlikely that hazards from earthquakes and tsunamis would occur together.

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[1] Burt Ewart, Project Designer, Munsell/Brown Partnership, Inc., telephone conversation July 27, 1982.

[2] Tim Ray, Construction Engineer, Swinerton Walberg, telephone conversation, August 2, 1982.

[3] R.W. Rudolph (C.E. 32136) and H.T. Taylor (C.E. 8787), Harding Lawson Associates, Soil Investigation, Embarcadero Terraces, The Embarcadero and Green Street, San Francisco, California, November 18, 1981, pages 5, 6, plate 1 (scale 1 inch equals 40 feet). This report is on file at the Department of City Planning.

[4] Cofferdam: Watertight enclosure from which water has been pumped to expose the bottom of a body of water to permit construction. Office of Environmental Review, Standard Definitions, San Francisco, California, November 15, 1979.

[5] Vello Kiisk, Chief Engineer, Port of San Francisco Engineering Department, telephone communication, February 24, 1983.

[6] Mervin Francies, Engineering Associate II, Sanitary Engineering, San Francisco Clean Water Program, telephone conversation, May 12, 1982.

[7] Due to the Upper Bay Mud's high water content (50-60% water is common in the uppermost 60-100 feet) and high montmorillonite content (a clay mineral which swells on contact with water and forms up to 60% of the Upper Bay Mud) heavy or rapid loading, as from new fill, leads to lateral shifting of the mud and settling of supported structures. J. Schlocker, Geology of the San Francisco North Quadrangle, California, U.S. Geological Survey, Prof. Paper 782, U.S. Government Printing Office, Washington, D.C. 1974, page 88 and Table 2.

[8] C.H. Lee and M. Praszker, "Bay Mud Developments and Related Structural Foundations", Geologic and Engineering Aspects of San Francisco Bay fill, California Division of Mines and Geology, Special Report 97, 1969, pages 43 to 45.

[9] Free-running soil conditions: Loose dry or wet soil (usually sand) which flows easily when support is removed. Soils of this type will not stand in excavation walls unless artificially supported by shoring. U.S. Department of the Interior, Bureau of Reclamation, Earth Manual, Washington, D.C., 1960.

[10] Colma Formation: Fine-grained sands with silt and clay at the top, grading into cleaner sand at the bottom. The lower part of the formation is very dense and is slightly cemented in places. Office of Environmental Review, Standard Definitions, San Francisco, California, November 15, 1979.

[11] J. Schlocker, op.cit., Table 2.

[12] Ross W. Rudolf (C.E. 32136), Harding Lawson Associates, telephone conversation, February 18, 1983.

[13] R.D. Borcherdt, et al., "Response of Local Geological Units to Groundshaking," Studies for Seismic Zonation of the San Francisco Bay Region, U.S. Geological Survey Prof. Paper 941-A, 1975, page A62.

[14] Liquefaction: Earthquake-induced transformation of a stable granular material, such as sand, into a fluidlike state, similar to quicksand. Office of Environmental Review, Standard Definitions, San Francisco, California, November 15, 1979.

[15] Densification: Compaction of loose soil such that it loses pore space and occupies a smaller volume, i.e., becomes more dense. American Geological Institute, Glossary of Geology, 2nd ed., R.L. Bates and J.A. Jackson, editors, Washington, D.C., 1980.

[16] Lateral spreading: Horizontal movements in soil which result from liquefaction or plastic flow of underlying materials. American Geological Institute, Glossary of Geology, 2nd ed., R.L. Bates and J.A. Jackson, editors, Washington, D.C., 1980.

[17] URS/John A. Blume and Associates, San Francisco Seismic Safety Investigation, San Francisco, California, June 1974, page 14 and Figure 3.

[18] K.M. Shedlock, et al., Earthquake Recurrence in the San Francisco Bay Region, From Fault Slip and Seismic Moment, U.S. Geological Survey Open File Report 80-999, Menlo Park, California, 1980, p. 10.

[19] U.S. Geological Survey, Earthquakes in the United States, 1979, Circular 836, 1980-1981, page B19, C19, C27.

[20] U.S. Geological Survey, Preliminary Determination of Epicenters, Monthly Listings, 1980-1981.

[21] Tsunamis: Long-period waves generated by earthquakes, undersea landslides or volcanoes; upon reaching the shallow water of coastal areas, the waves greatly increase in height and may cause localized flooding. Office of Environmental Review, Standard Definitions, San Francisco, California, November 15, 1979.

[22] Diane Pierzinski, Environmental Planner, Department of Conservation, "Tsunamis," California Geology, Sacramento, CA, March 1981, pages 58 and 59.

[23] Seiches: Free or standing-wave oscillations of the surface of water in an enclosed or semi-enclosed basin (as a lake, bay or harbor) initiated chiefly by local changes in atmospheric pressure, aided by winds, tidal currents and small earthquakes and/or landslides. American Geological Institute, Glossary of Geology, Washington, D.C., 1980.

[24] A 100-year run-up event is one that is equaled or exceeded with an average frequency of once every 100 years; a 500-year runup event has a corresponding definition. Garcia, A and J. Houston, Type 16 Flood Insurance Study, U.S. Army Corps of Engineers, Technical Report, H-75-17, Washington, D.C., November 1975, page 4.

[25] Garcia, A. and J. Houston, Type 16 Flood Insurance Study, U.S. Army Corps of Engineers, Technical Report, H-75-17, Washington, D.C., November 1975, Figure 55.

K. CUMULATIVE PUBLIC SERVICES

Increased construction in the project area could result in an increase in burglary and petty theft due to the increase in office population and property value. The San Francisco Police Department indicates that it would not require additional personnel or equipment to serve the proposed project.[1]

Cumulative development would eventually increase the demand for public services because of the resulting additional population, property and traffic. Because most new office developments incorporate security systems and personnel in their plans, they typically require fewer public police than do older, similar developments. Additional street activity due to increased development could decrease incidence of some types of crime.

The project would place a building on a now open parking lot which would increase the need for fire protection service at the site. New high-rise structures in San Francisco have been required to conform to the Life Safety provisions of the San Francisco Building Code since 1975. Although the project would be under 75 feet in height and therefore not classified as a high-rise by the San Francisco Fire Department,[2] the project would meet many of the Life Safety provisions. Although the probability of a fire occurring in a new building is about the same as that for any pre-1975 building of similar size and occupancy, the chance of the fire spreading is reduced by the automatic operation of the fire sprinkler(s). In the majority of fires involving fully sprinklered buildings, a single sprinkler is adequate to control the fire because the sprinkler extinguishes flames before they spread. Since new buildings must comply with the fire safety provisions of the San Francisco Building Code, the proposed project would be expected to require fewer multiple alarm calls for firefighting services than older structures. The project sponsor would contact the San Francisco Fire Department to ascertain whether relocation of the fire hydrant located adjacent to the project site would be necessary to insure adequate access for the fire department. Cost of relocation would be borne by the project sponsor. Streets adjoining the site are relatively wide (approximately 70 feet) which would provide some separation between the project and existing buildings.

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[1] Paul Libert, Sergeant, San Francisco Police Department, Planning and Research, letter, May 6, 1982.

[2] Edward Murphy, Assistant Chief, San Francisco Fire Department, Support Services, telephone conversation, May 12, 1982.

L. GROWTH INDUCEMENT

The proposed project would add about 139,000 gross square feet of office space and 3,000 gross square feet of restaurant space to San Francisco. The project would represent an addition of less than one percent of net new gross office space for projects currently under review and approved or under construction in downtown San Francisco.

The project site presently contains a self-service parking lot which sustains no full-time on-site employment. The net employment-inducing effect of the project could be estimated at approximately 570 primary and 610 indirectly-induced jobs, or a total of about 1,180 jobs. According to the Office Housing Production Program's formula the project would result in a demand for 123 housing units in San Francisco.

Together with other new office development near the site in the Base of Telegraph Hill area, the project could stimulate further office growth, possibly in low-rise structures that now contain businesses and light industrial uses (such as warehousing). Currently, there are 99,000 gross square feet of office space approved or under construction in the Base of Telegraph Hill area, and there are an additional 428,000 gross square feet of office development under formal review. The proposed project represents approximately 26% of the cumulative office development in the Base of Telegraph Hill Area (see Section IV.B., Table 1, page 24).

V. MITIGATION MEASURES WHICH WOULD MINIMIZE THE POTENTIAL IMPACTS OF THE PROJECT

In the course of project planning and design, measures have been identified that would reduce or eliminate potential environmental impacts of the proposed project. Some of these measures have been, or would be, adopted by the project sponsor or project architects and contractors (mitigation measures included as part of the project and presented in the Initial Study are reproduced below), the remainder are not included in the project, and some may be implemented by public agencies. The City Planning Commission could require that some or all of these measures be included as conditions of project approval.

Each mitigation measure and its status is discussed below. Where a measure has not been included in the project, the reasons for this are discussed.

A. VISUAL QUALITY AND URBAN DESIGN

MITIGATION MEASURE INCLUDED IN THE PROPOSED PROJECT

The project sponsor will ensure that street trees selected for the project will be coordinated to match other street tree species currently growing in the project area to maintain visual continuity, and will coordinate this effort with the Department of City Planning.

MITIGATION MEASURE NOT INCLUDED AS PART OF THE PROJECT

As a part of its site development program, Levi's Plaza has provided landscape improvements of trees, grass, pedestrian walkways and sitting areas on the block bounded by The Embarcadero and Greenwich, Battery and Filbert Streets. The City's plans for Embarcadero improvements call for the closure of Green Street where the existing right-of-way joins The Embarcadero adjacent to the project's south property line.[1] From a visual standpoint, it would be preferable to open Green Street to The Embarcadero and close Union Street. Such a measure would allow the project sponsor to extend the landscaping of Levi's Plaza along the west edge of The Embarcadero to the project site's south property line as a continuous greenbelt. The project would still use Green Street for vehicular access to the parking garage. A change in street closure would require action by the Department of Public Works. The project sponsor does not intend to request initiation of such action.

B. HISTORIC AND CULTURAL RESOURCES

MITIGATION MEASURE INCLUDED IN THE PROPOSED PROJECT

Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer and the President of the Landmarks Preservation Advisory Board would be notified. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The Environmental Review Officer would then recommend specific mitigation measures, if necessary, and recommendations would be sent to the State Office of Historic Preservation. Excavation or construction which might damage the discovered cultural resources would be suspended for a maximum of four weeks to permit inspection, recommendation and retrieval, if appropriate.

MITIGATION MEASURES NOT INCLUDED IN THE PROPOSED PROJECT

It is recommended that a limited program of preconstruction archaeological testing be undertaken within the project area to determine with certainty whether the remains of one or more Gold Rush hulks lie beneath the project site. If the testing uncovered the remains of a hulk, the archaeologist would determine, to the greatest extent possible, the dimensions and orientation of the vessel beneath the ground surface. Measures to mitigate adverse impacts to the resource will be recommended. The sponsor could retain an archaeologist as an on-site monitor during relevant construction phases.

These measures were rejected by the project sponsor because in his opinion it is not warranted (based on exploratory borings). In addition, the sponsor feels that the potential impact of encountering any significant cultural resources that may exist beneath the site during construction are already mitigated by the above mitigation measure included in the project.

C. HOUSING

MITIGATION MEASURE INCLUDED IN THE PROPOSED PROJECT

According to the formula contained in the Office Housing Program Guidelines (OHPP), the project would generate demand for 123 housing units in San Francisco. The Planning Commission could require, as a condition of approval, that the project sponsor satisfy the housing demand by development of on- or off-site housing, or by other means such as contributions to a non-profit housing development corporation. The project sponsor would provide the number of housing units up to 123, according to the OHPP Guidelines.

D. TRANSPORTATION

MITIGATION MEASURES INCLUDED IN THE PROPOSED PROJECT

- The project sponsor would encourage transit use by employees in the proposed building by means of on-site sale of BART and Muni passes, and promoting an employee car pool/van pool system in cooperation with RIDES for Bay Area Commuters, or other such enterprises.

- The project sponsor would promote flex-time work hours for office employees to reduce peak traffic impacts.

- The project sponsor would provide preferential parking for car pools, van pools, bicycles and handicapped persons.

- After completion of the project, the project sponsor would conduct a survey (in accordance with a schedule and methodology approved by the Department of City Planning), to assess actual trip generation patterns of project occupants, and actual pick-up and drop-off areas for car poolers and van poolers. This survey would be made available to the Department of City Planning. Alternatively, at the request of the Department of City Planning, the project sponsor would provide an in-lieu contribution for an overall survey of the downtown area to be conducted by the City.

- The project sponsor would participate in a future areawide study of current parking conditions and future needs. If new short-term or long-term parking is appropriate in the downtown area, the project sponsor would participate in the equitable funding of such facilities through a special assessment district according to criteria determined by the study.

- A bell and lighted sign would be installed to alert pedestrians of outbound vehicles at the parking garage driveway.

- With respect to construction impacts, the project sponsor would ensure that safe and convenient pedestrian access would be maintained throughout the construction period on designated walkways around the project site. The delivery of equipment, materials, etc., would be assigned to Green Street and prohibited during the peak traffic flow periods (7:00-9:00 a.m. and 4:00-6:00 p.m.). A truck routing plan would be developed in consultation with the Traffic Engineering Division of the City's Department of Public Works.

- Should Ordinance No. 224.81, which would require the sponsor to contribute funds for maintaining and augmenting transportation service in an amount proportional to the demand created by the project, be declared invalid by the courts, the project sponsor has agreed to participate in any subsequent equivalent mitigation measures adopted in lieu thereof that are equitable and legal, which the City adopts to apply to all developments which are similarly situated.

E. NOISE

MITIGATION MEASURES INCLUDED IN THE PROPOSED PROJECT

Both intake and exhaust of impact tools and equipment would be muffled to the satisfaction of the Director of Public Works. Mufflers and shrouds on jackhammers, pile drivers and impact wrenches could reduce the noise impacts of these operations by 10-15 dBA. This would reduce the impacts of these operations to 60 dBA or below at adjacent office or retail spaces with windows closed; with open windows noise levels would be distracting but would not interfere with telephone use.

The project sponsor would incorporate the following measures to reduce pile driving noise: restrict the hours of pile driving to minimize interference with adjacent uses; predrill the holes; reduce the depth of the piles to the minimum required for adequate foundation strength, thereby reducing the number of blows per pile; and use installing shrouds around the piles to block noise. These measures could reduce noise levels by 10-15 dBA. This mitigation measure would reduce noise levels to a point where concentration and telephone use would not be impaired in adjacent spaces with fixed glazed windows. Telephone use and concentration would be interfered with in buildings with open windows across Front Street. The project contractor would limit pile driving to the hours resulting in the least disturbance to the greatest number of neighboring uses.

F. AIR QUALITY AND CLIMATE

MITIGATION MEASURES INCLUDED IN THE PROPOSED PROJECT

Those measures identified in the Transportation Mitigation section of this report which would reduce traffic volumes or congestion would also reduce air pollutant emissions. These include encouragement of transit use by employees, flexible work hours, preferential parking for carpools, vanpools and bicycles, and contribution of funds for maintaining and augmenting transit service. Also, construction vehicle traffic would be prohibited during peak traffic hours.

G. ENERGY

MITIGATION MEASURES INCLUDED IN THE PROPOSED PROJECT

The project sponsor proposes to incorporate the following design features into the proposed project:

- Air economizer cycle on Heating, Ventilating and Air Conditioning equipment (HVAC)
- Temperature reset
- Variable air volume HVAC system
- Automatic time clock control
- Reflective glass
- Overhangs
- Task lighting

MITIGATION MEASURES NOT INCLUDED IN THE PROPOSED PROJECT

The project sponsor has not made any final decisions concerning additional mitigation measures for energy consumption that would be considered as part of the design process.

Final decisions would be made by the project sponsor on the basis of life cycle cost for the measures and compatability with the overall design; a separate report would be prepared and made available to the Department of City Planning (DCP) prior to the application for the building permit which would explain the decisions regarding energy conservation features to be included in the final design. The project sponsor would meet with DCP staff to discuss energy-conserving strategies for the project. Measures under consideration include, but would not necessarily be limited to: automated energy management; high efficiency outdoor lighting; and an energy audit after a year of normal operation and implementation of recommended measures with a simple payback of three years or less. Decision makers may require these measures (or some variations of these measures) as a condition of approval even though the project sponsor has not made a decision to include them in the project.

H. GEOLOGY, HYDROLOGY AND SEISMICITY

MITIGATION MEASURES INCLUDED IN THE PROPOSED PROJECT

- During excavation, the project contractor would mechanically sweep streets adjacent to the site to prevent siltation of storm drains. The contractor would confine construction equipment maintenance and refueling activities to locations where petroleum spillage would be contained, and would construct wet and dry catchment basins on site to trap silt and debris for later transportation to dumps. Contaminants would be flushed to catchment basins, and debris and quality of water discharged into City sewers would be monitored.

- Cofferdams would be installed around the construction site as a groundwater exclusion device. The cofferdams would be installed in accordance with the standards and specifications of the project sponsor's California-licensed geotechnical consultants and approval by the Port's Chief Engineer to prevent groundwater infiltration during construction.

- The building would be supported on pre-stressed concrete piles, driven into dense sand or bedrock. A building supported on such a foundation would not be subject to the effects produced on artificial fill and Bay Mud by static or seismically-induced loads (settlement, liquefaction, densification, lateral spreading).

- To facilitate penetration of soils with a minimum amount of noise and vibration from pile driving, the pile locations would be predrilled.[2]

- Prior to pre-drilling and pile driving operations, elevation readings and photographs would be taken of adjacent properties, and during pile driving operations, the established survey points would be monitored and the adjacent structures examined for settlement or cracks; if so, operations would cease pending further recommendations of the geotechnical consultants.

I. COMMUNITY SERVICES AND PUBLIC SERVICES

MITIGATION MEASURES INCLUDED IN THE PROPOSED PROJECT

The project sponsor would incorporate security systems in the building to minimize the need for City police services.

The domestic water system would include water conservation devices such as flow control devices for lavatories, drinking fountains and showers to minimize overall use of domestic water.

J. HAZARDS[3]

MITIGATION MEASURE INCLUDED IN THE PROPOSED PROJECT

An evacuation and emergency response plan would be developed by the project sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to insure coordination between the City's emergency planning activities and the project's plan and to provide for building occupants in the event of an emergency. The project's plan would be reviewed by the Office of Emergency Services and implemented by building management insofar as feasible before issuance by the Port of San Francisco of final building permits.

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[1] City and County of San Francisco, Department of Public Works, Bureau of Engineering, proposed Embarcadero Roadway (Stage 1), File No. STR-6066.2, Sheets 3 and 4, March 15, 1982.

[2] Ross W. Rudolph, C.E. 32136, Harding Lawson Associates, telephone conversation, February 28, 1983.

[3] A detailed evaluation of hazard risks was focused out of the EIR during the initial study process (see Appendix A, page A-16).

VI. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROJECT IS IMPLEMENTED

TRANSPORTATION, CIRCULATION AND PARKING

Based upon estimates of Muni load factors that would occur upon completion of cumulative office development in the downtown area, the project would generate an increase of approximately 15% in the projected peak hour load (reflecting cumulative downtown development) for transit lines within walking distance (one-quarter mile) of the project site.

The proposed project's total parking demand would be about 80 spaces. The project would eliminate 304 existing surface spaces and provide 50 underground spaces. The added parking demand would increase surrounding parking occupancy from 82% to 96%, virtually saturating the existing parking supply.

VII. ALTERNATIVES TO THE PROPOSED PROJECT

A. ALTERNATIVE ONE: NO-PROJECT

This alternative would involve no change to the project site as it now exists. The 304-space surface parking lot would remain in use for an unspecified length of time. This alternative would hold open future options for the land to be developed under the same or other permitted uses in the C-2 Community Business District, Northern Waterfront Special Use District No. 3 and within the Northeast Waterfront Historic District.

With the retention of the project site in its present state, none of the impacts associated with the proposed Embarcadero Office Terraces would occur. The existing transportation and air quality conditions (see Sections III.E. and F., pages 39 and 42) would continue on streets around the site. The peak hour level of service on the streets surrounding the project would remain unchanged and Muni load factors for transit lines within 2,000 feet of the project site would be five to nine percent lower than if the proposed project were implemented. Current levels of parking demand, noise, air pollution, energy consumption, wind and visual effects would remain unchanged. This alternative would provide no additional employment, no increase of taxable revenues accruing to the City, and no increased cost to the City for supplying services.

The project sponsor has rejected this alternative because the site is currently vacant and used for surface parking, and in the opinion of the project sponsor, would perpetuate an inefficient and wasteful use of land resources within an area of new commercial development; and because this alternative would not respond to the objectives of the Port, particularly the objective of maximizing revenues.

B. ALTERNATIVE TWO: MIXED USE: COMBINED OFFICE AND RESIDENTIAL

This alternative would consist of a 40-foot structure that would have the same exterior design and contain the same gross square feet (gsf) of floor space as the proposed project.

This alternative would not provide any restaurant space and would contain housing units and office space in amounts as shown:

Office: about 29,000 square feet occupying the first floor (20%).

Housing: about 115,500 square feet (231 units at about 500 gsf each) occupying the second, third and fourth floors (80%)

Parking: about 41,000 square feet (97 subsurface parking spaces).

Alternative Two represents the maximum housing mix that could be accommodated on the project site. Section 215(a) of the City Planning Code indicates that the number of dwelling units permitted on any lot in a C District may not exceed that allowed in the nearest R (residential) District. The nearest R District is RC-4, two blocks south of the project site. The maximum density permitted for RC-4 is one dwelling unit for each 200 square feet of lot area. In addition, each unit can contain no more than 500 square feet of net floor area. The 46,200-square-foot project site would permit a maximum of 231 dwelling units.

The Planning Code specifies one off-street parking space for every 500 square feet of occupied office space and one for every four dwelling units for the project site (Section 151). Assuming 90% of the gross floor area as occupied floor area, this alternative would require a total of about 111 parking spaces. Assuming identical proportional parking space requirements as for the proposed project (50 spaces/21,000 square feet), this alternative would require a total of about 46,600 square feet of basement parking, about 5,600 square feet more than available 41,000-square-foot basement capacity. The alternative would provide a maximum of 97 spaces and thus would not comply with off-street parking requirements. Like the proposed project, Alternative Two would require a variance for this reason.

The reduction of office space and introduction of residential space with this alternative would generate about 22% fewer daily person trips and about 21% fewer peak hour trips in both directions than the proposed project. Traffic-generated noise would not be audibly reduced; air quality could be improved, but any improvement would not be of measurable magnitude. An increase in energy consumption would be likely due to the increased residential use on the site compared to the proposed project. Demand for public services would occur due to the advent of residential units on site. Visual impacts would be the same as for the proposed project.

This alternative would increase the City's housing stock by a maximum of 231 dwelling units. According to the City Office Housing Production Program (OHPP), the office space contained in this alternative would generate a City housing demand of about 26 units,[1] although this policy is not applied to projects under 50,000 square feet because the accuracy of estimates is limited at this low figure.

This alternative was rejected by the project sponsor as office space would provide a higher return on investment than residential space. Land use objectives adopted by the Port Commission in Maritime Strategy II specify that the site be developed at the "highest and best use."[2] The inclusion of residential units in the proposed project would require installation of additional security measures, plumbing, wiring and related services that would increase construction costs and reduce useable floor area.

C. ALTERNATIVE THREE: ALL RESIDENTIAL

This alternative would provide development only of the maximum amount allowed according to Section 215(a) of the City Planning Code. As indicated in Alternative Two, the maximum density would be consistent with RC-4 district requirements of one dwelling unit for each 200 square feet of lot area (provided each unit contains no more than 500 square feet of net floor area).

This alternative would contain the following:

Housing: about 115,500 square feet occupying four floors (100%)
Parking: about 24,400 square feet (58 subsurface parking spaces)

This alternative would provide about 231 dwelling units (500 square feet each) of privately owned condominiums. The units would be grouped in a four-story structure occupying approximately 35,500 square feet of the project site. Private usable open space would be accessible from each dwelling unit as enclosed yards or balconies. A minimum of 36 square feet of usable open space is required for each dwelling unit (Section 135(d)). This alternative would contain both private and common open space areas, which would exceed this requirement. A total of 58 subsurface parking spaces (one space per four dwelling units) would be provided.

This alternative represents the maximum use of the project site containing residential space only. The elimination of the proposed project's office space would generate about 40% fewer daily trips and about 40% fewer peak hour trips. Traffic-generated noise would not be audibly reduced; air quality would be improved, but the improvement would not be of measurable magnitude. Maximum residential land uses would increase the demand for public services. Energy consumption would be likely to decrease as a result of this alternative's reduced size and increased residential use compared to the proposed project. The 58 parking spaces would provide more on-site spaces than the proposed project; however, use of the spaces would be restricted to residents and guests.

The building exterior design and use of facade materials for this alternative would be similar to the proposed project. Like the proposed project, it would be a four-story structure; however, gross square footage would be reduced, resulting in reduced site coverage and increased open space. Overall visual impacts, therefore, would be reduced.

The distinguishing characteristic of this alternative compared to the proposed project would be the provision of housing units which would contribute to the City's housing stock.

This alternative was rejected by the project sponsor because it does not meet the objectives of the project and the goals of the Port for the site. The project sponsor wishes to maximize use of the project site and believes that office space would provide a higher return on investment than residential. In addition, the Port did not request residential use of the site in the bid notice.

D. ALTERNATIVE FOUR: ALTERNATIVE DESIGN - ADDITIONAL OFFICE SPACE

This alternative would consist of a structure that would be identical to the proposed project except 20,000 gross square feet used as basement storage space in the project would be used as office space in this alternative.

This alternative would contain the following:

Office: about 159,000 square feet occupying all four floors above ground and 20,000 square feet of the garage level.

Restaurant: about 3,000 square feet occupying approximately 10% of the first floor.

Parking: about 21,000 square feet of the garage level (50 spaces).

The Planning Code specifies one off-street parking space for every 500 square feet of occupied floor area for office uses (Section 151). Assuming 90% of the gross floor area as occupied floor area, this alternative would require a total of about 287 parking spaces. Therefore, like the proposed project, this alternative would require a variance for exception to the off-street parking requirement.

This alternative would provide approximately 14% more office space than the proposed project. The increase in office space and elimination of storage space would generate about 12% more daily person trips and about 14% more peak hour trips than the proposed project. Traffic-generated noise and air quality impacts would be increased but would not be of measurable magnitude. Demand for public services and energy consumption would be likely to increase due to the proportional increase of office space. Visual impacts would be the same as for the proposed project.

According to the City Office Housing Production Program (OHPP), the housing demand in San Francisco due to this alternative would be 142 units.[1] Like the proposed project, the sponsor would adhere to the OHPP requirement by causing up to 142 housing units to be constructed off-site.

This alternative would preclude use of 20,000 square feet of basement storage. Although Alternative Three would represent the most efficient use of floor area in terms of leaseable space, traffic associated impacts would also be greater. The project sponsor has, therefore, rejected this alternative.

E. ALTERNATIVE FIVE: MARITIME SUPPORT USE

Objective One of the City's Northeastern Waterfront Plan proposes "to retain existing maritime and maritime-related activities." This alternative would conform to that objective by developing a structure for use as warehouse storage for ships and/or maritime back-up truck parking for uses occurring on adjacent Piers 15 and 17.

Section 212(a) of the City Planning Code requires all storage, servicing, fabricating, processing or repair uses in C-2 Districts to be conducted within enclosed buildings. To maximize enclosed areas, the structure would cover approximately 95% of the project site (45,000 square feet) compared with about 40,000 (87% coverage) for the proposed project. The 22 off-street parking spaces required would be within the warehouse. In accordance with Section 240.3(g) of the Planning Code, the structure would be screened from the view of adjacent steets and other public areas. This alternative would be similar in height to the two-story Pacific Telephone and Telegraph warehouse directly west of the proposed project. Facade materials would be less ornamental than for the proposed project and would be similar to surrounding light industrial buildings and warehouses.

Maritime-related vehicles could generate more localized traffic and concomitant noise, air pollution and fuel use than the proposed project. Since the structure would primarily be used for a warehouse, building energy consumption would be substantially less than for the proposed project. In addition, the number of peak hour vehicle trips and transit demands would be likely to decrease as a result of the reduced size and primary use of the structure.

This alternative was rejected because it fails to meet the sponsor's stated objectives, nor would it comply with the land use objectives contained in Maritime Strategy II for the San Francisco Port Commission which states that the project site be developed at the "highest and best use."[2]

F. ALTERNATIVE SIX: HOTEL

This alternative would consist of a structure with the same building envelope and gross square footage as the proposed project but containing a 225-room hotel. Like the proposed project, this alternative would provide 50 subsurface parking spaces. Since one space would be required for each 16 guest bedrooms (Planning Code Section 151), a minimum of 14 spaces would be required while Conditional Use Authorization would be required in order to provide more than 24 spaces. The ground level of this structure would contain hotel amenities such as a lobby, hotel registration area, restaurant and/or lounge and retail specialty shops catering to hotel guests and visitors. The upper three floors of the structure would contain hotel rooms.

Wind and visual effects of this alternative would be similar to those of the proposed project except that the possible inclusion of additional balconies would provide a different type of facde. Hotel use would generate about 16% more daily person trips and 7% fewer peak hour trips than the proposed project. Hotel use would generate less employment and less demand for employee housing, and would be likely to consume more energy and more water than the project as proposed. Actual differences in these factors would vary with the design of the hotel.

The project sponsor has rejected this alternative because it would not meet the objectives of the proposed project. In addition, the sponsor considers that another hotel in this area would not provide a reasonable return on the investment potential of the site, nor would it meet the Port's objectives for the site as stated in Maritime Strategy II.

G. ALTERNATIVE SEVEN: ALTERNATIVE DESIGN: NO EXCEPTIONS TO PLANNING CODE

This alternative would contain the same building envelope as the proposed project but would comply with the City's Planning Code requirements for off-street parking (Section 151). Incorporating on-site parking into the project design would reduce total office space to 100,000 square feet (and associated required off-site parking spaces) and eliminate all restaurant and basement storage space. The lobby would remain on the ground floor with

200 parking spaces occupying the basement, ground floor and approximately 50% of the second floor. Office space would occupy the remainder of the second floor and all of the third and fourth floors.

Traffic generated noise would not be audibly changed. The impact on regional air quality would be approximately the same as that of the proposed project. Local air quality impacts would be increased but would not be of measurable magnitude.

This alternative represents the maximum office space with associated required off-street parking that could be accommodated within the area height limit. This alternative would increase the number of on-site parking spaces by 150. The reduction of office space would generate about 38% fewer daily person trips and about 34% fewer peak hour trips. Traffic-generated noise would not be audibly reduced. Energy consumption would be likely to be less due primarily to decreased amounts of air-conditioned space as well as fewer electrical fixtures. Since the overall height and building design for this alternative would be the same as the proposed project visual impacts would be similar, assuming all parking would be enclosed according to the Planning Code.

Incorporating on-site parking into the project design would substantially relieve or eliminate parking demands generated by the project and reduce cumulative traffic impacts associated with increased office development. If the proposed project or any alternative besides Alternative One were implemented, the 304-space parking lot now existing on the project site would be removed, reducing available parking in the area. Objective 1, Policy 2 of the transportation section of the City's Northeastern Waterfront Plan states that additional parking facilities in the area should be limited.

This alternative was rejected by the project sponsor because it would substantially reduce rentable office space and limit the return on project investment.

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[1] $\frac{\text{29,000 gross square feet}}{250} \times 40\% \div 1.8 = 26 \text{ units}$

This estimate assumes that 40% of new office workers will reside in San Francisco and that there are 1.8 office workers per household containing San Francisco office workers. The estimate is derived from Sedway/Cooke, Downtown San Francisco Conservation and Development Program, Phase I, 1979, page 48.

San Francisco Department of City Planning, Revised Guidelines for Administering the Housing Requirements Placed on Office Development under OHPP, December 7, 1981, page 5.

[2] San Francisco Port Commission, Maritime Strategy II: Maritime and Commercial Land Uses, May 23, 1979.

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APPENDIX A

DEPARTMENT OF CITY PLANNING 450 McAllister St. - 5th Floor

(415)558-5260

NOTICE THAT AN ENVIRONMENTAL IMPACT REPORT IS DETERMINED TO BE REQUIRED

Date of this Notice: August 6, 1982

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister St. - 5th Floor, San Francisco CA 94102

Agency Contact Person: Carol Roos Tel: (415) 558-5260

Project Title: 82.129E : Embarcadero Office Terraces

Project Sponsor: Seawall Lot 321 Limited Partnership

Project Contact Person: Robert Meyers

Project Address: 1000 Front Street

Assessor's Block(s) and Lot(s): Lot 1 in Assessor's Block 110

City and County: San Francisco

Project Description: Construction of a four-story, 40-foot-tall office building of 184,000 gross sq. ft. including about 142,000 sq. ft. of office, 3,000 sq. ft. of restaurant, 37,000 sq. ft. of basement level storage and parking (40 spaces), and loading. The project would replace a surface parking lot.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15081 (Determining Significant Effect), 15082 (Mandatory Findings of Significance) and 15084 (Decision to Prepare an EIR), and the following reasons, as documented in the Initial Evaluation (initial study) for the project, which is on file at the Department of City Planning:

Please see the attached Initial Study.

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: August 16, 1982.

An appeal requires 1) a letter specifying the grounds for the appeal, and 2) a $35.00 filing fee.

Alec S. Bash

Alec S. Bash, Environmental Review Officer

FINAL
INITIAL STUDY
82.129E
AUGUST 1982

I. PROJECT DESCRIPTION

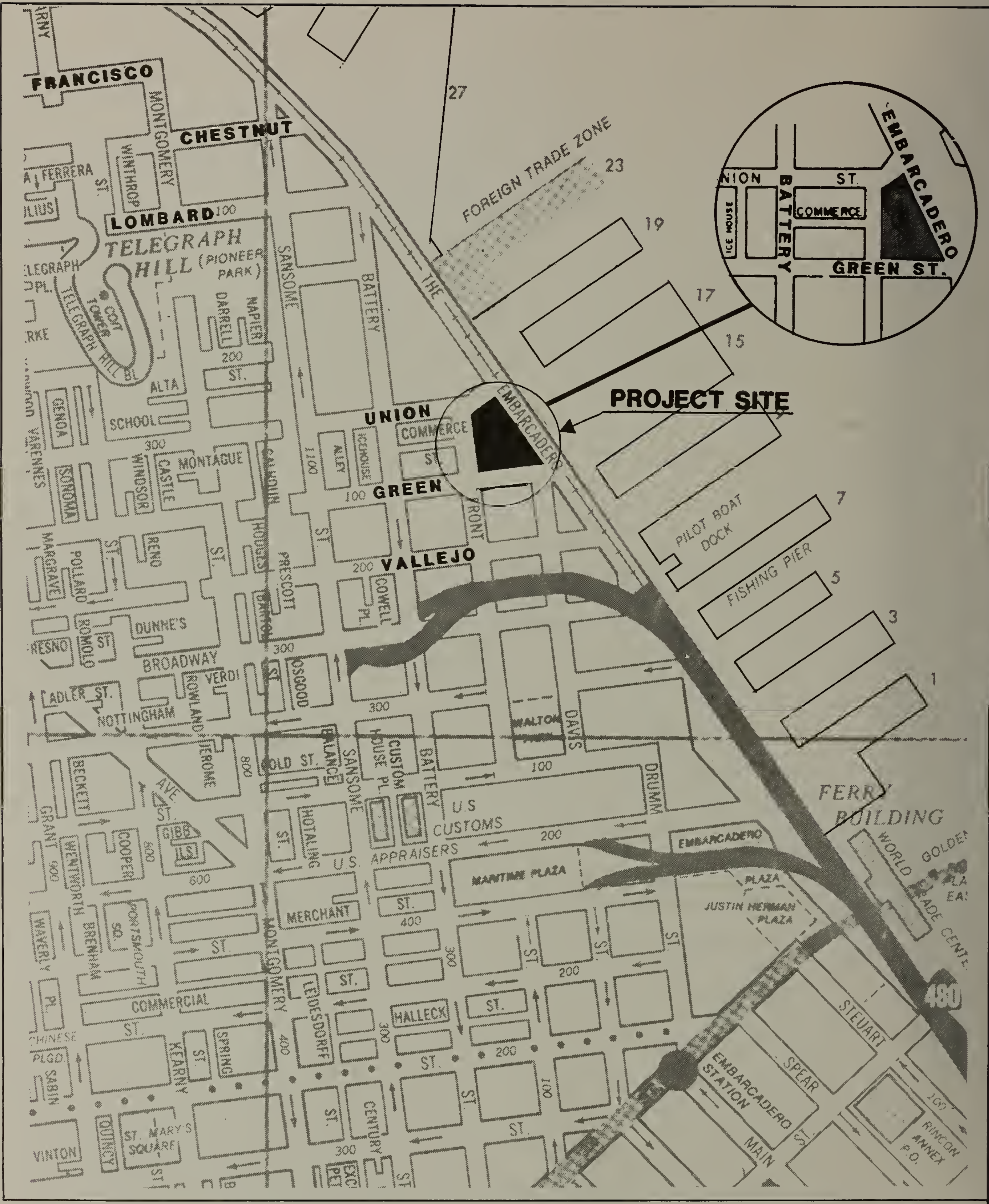
The proposed project would be located at 1000 Front Street on Assessor's Block 110, Lot 1, bounded by The Embarcadero, Green Street, Front Street and Union Street (Figure 1). The site is zoned C-2 (Community Business District) and lies within the Northern Waterfront Special Use District No. 3 and the proposed Northeastern Waterfront Historical District.

The project sponsor, Seawall Lot 321 Limited Partnership, proposes a four-story office building with a single, partial level of subsurface parking (Figures 2, 3 and 4). The structure would be 40 feet high, would cover approximately 40,000 square feet of ground area and would contain approximately 184,000 gross square feet of floor area. Of the gross square footage, approximately 142,000 square feet would be utilized as office space, 3,000 square feet as ground floor restaurant space and 37,000 square feet as basement-level storage and parking space. Pedestrian access to the proposed project would be from Front Street and from The Embarcadero. Access to parking and loading facilities would be from Green Street.

II. SUMMARY OF POTENTIAL EFFECTS

A. SIGNIFICANT EFFECTS

The Embarcadero Office Terraces project is examined in this Initial Study to identify its potential effects on the environment. The proposed project may generate environmental impacts that could be considered significant and these will be analyzed in an Environmental Impact Report. Potential environmental effects from the project include effects on land use; long-range views; transportation, circulation and parking; population, employment and housing; noise; localized impacts in wind patterns; cumulative effects on energy, public services and utilities; geology; groundwater; and archaeological and historic resources.



① **LOT NUMBER**

110 **BLOCK NUMBER**

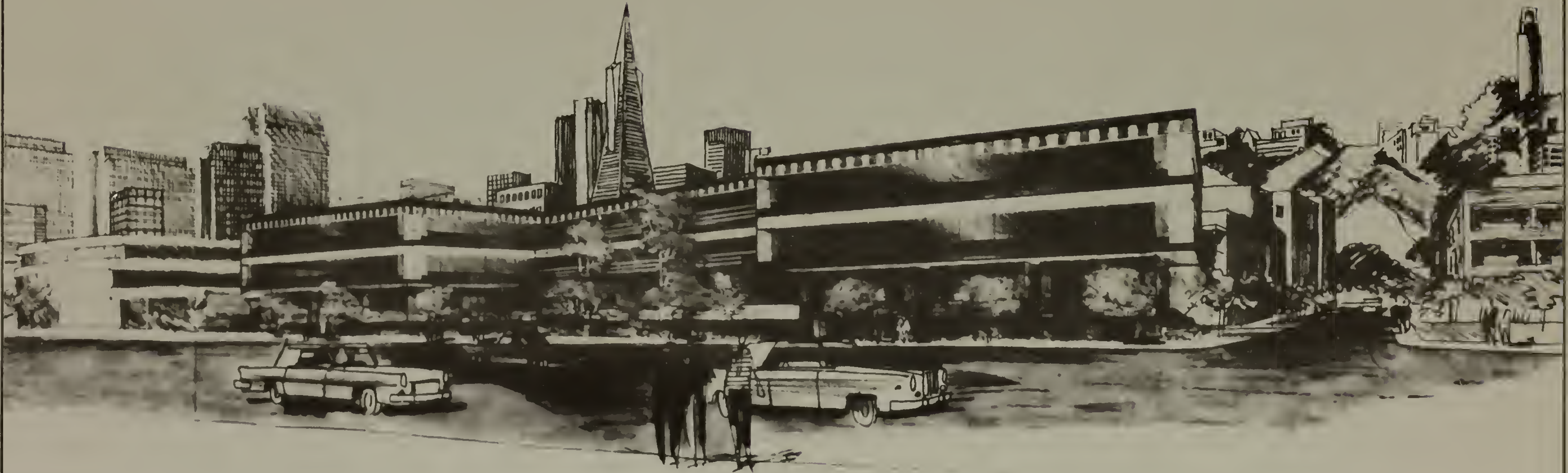
SCALE 0 500 1000 2000 FEET

N

Embarcadero Office Terraces

SITE LOCATION MAP

1

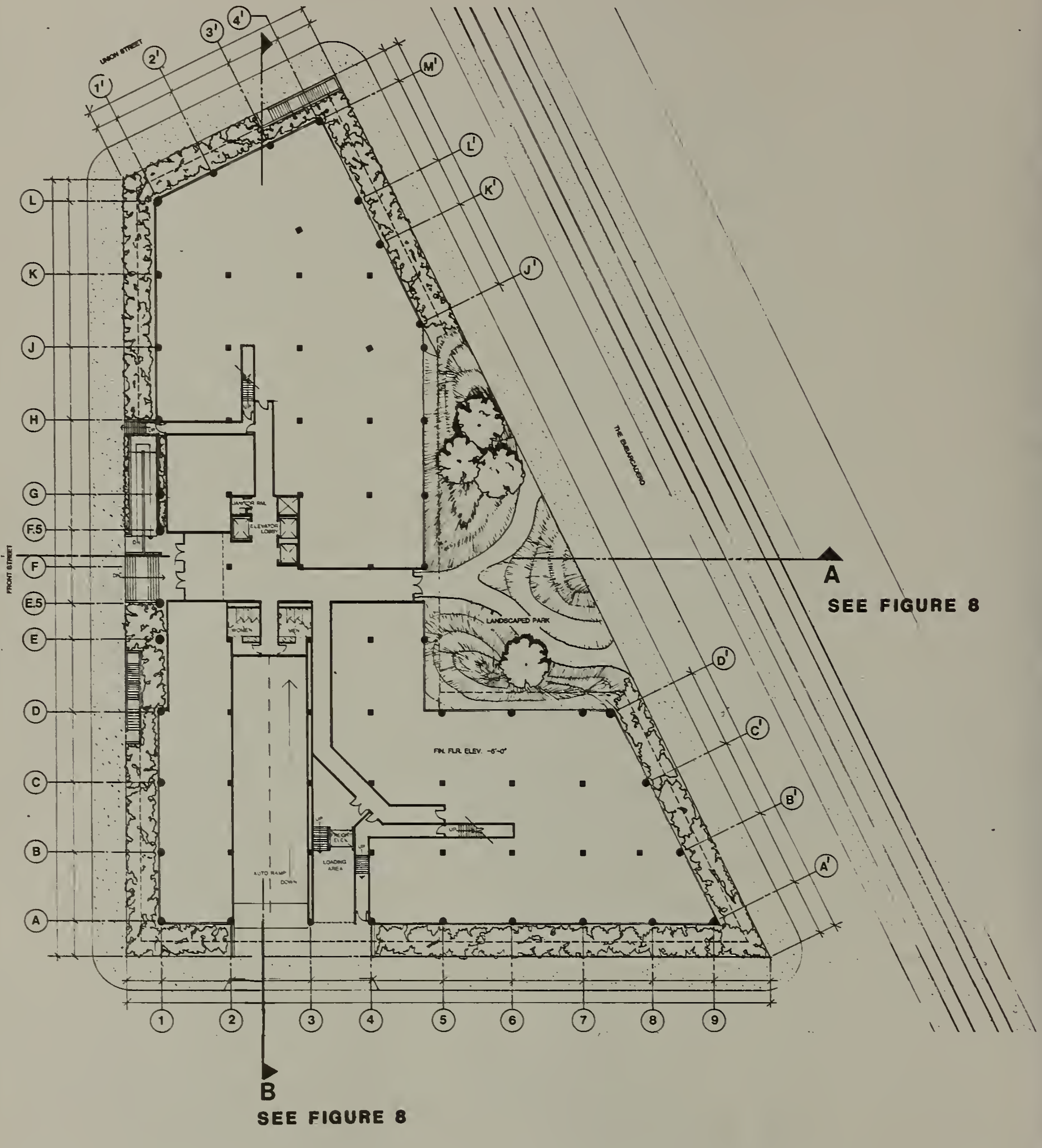


SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

Embarcadero Office Terraces

PERSPECTIVE VIEW

2



SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

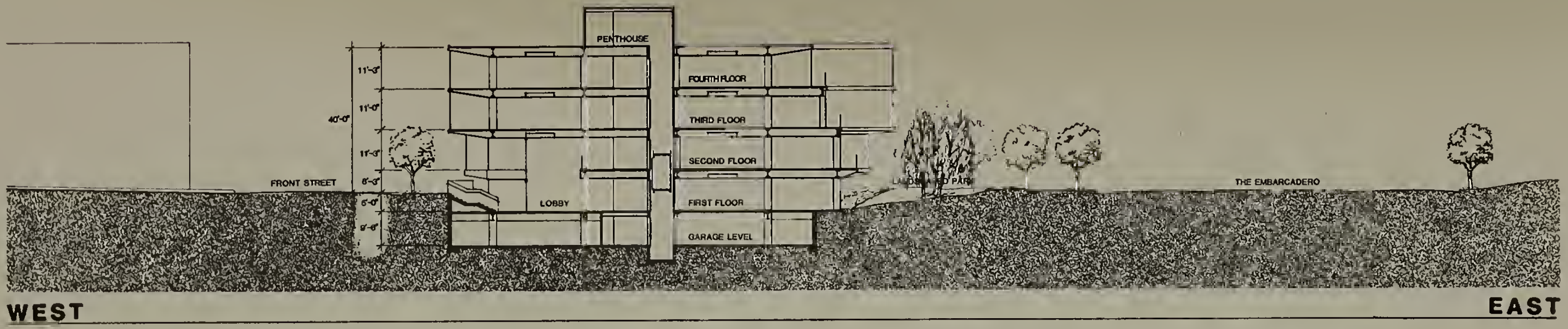
SCALE 0 20 40 80 FEET

N

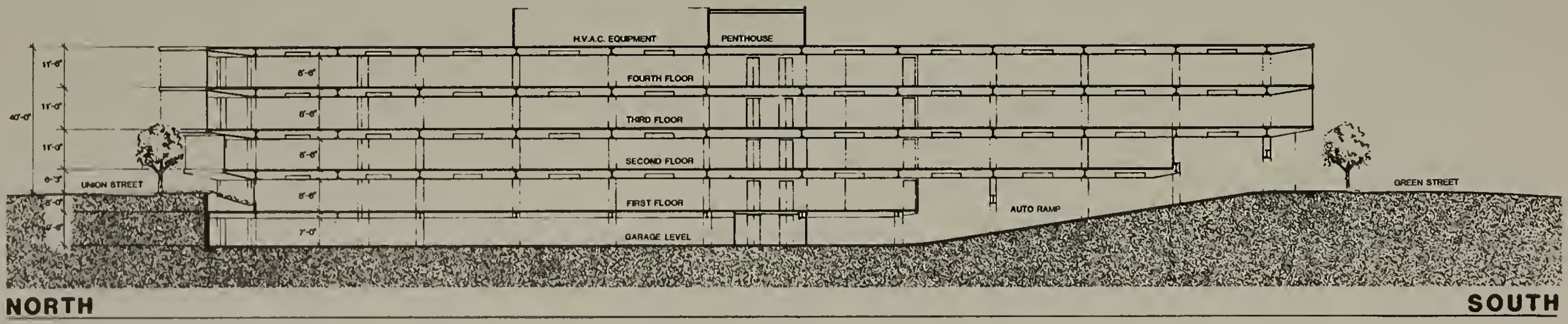
Embarcadero Office Terraces

FIRST FLOOR AND SITE PLAN

3



SECTION A



SECTION B

SOURCE: THE MUNSELLE/BROWN PARTNERSHIP INC.

SCALE 0 20 40 80 FEET

N

Embarcadero Office Terraces

SECTIONS

4

B. INSIGNIFICANT EFFECTS

The proposed Embarcadero Office Terraces would not have significant environmental effects on the areas indicated below. These potential environmental issues require no further study and will not be addressed in the subsequent EIR.

1. Relocation

The project site is currently used as a public self-serve surface parking lot and would not require relocation of housing or businesses or a displacement of people in order to clear the site.

2. Odors/Burning of Materials

Construction and operation of the proposed project would not create objectionable odors nor would the project involve burning any materials.

3. Utilities and Public Services

The increased demand for public services and utilities generated by the proposed project would not require additional personnel or equipment and requires no further study. The cumulative impacts of the proposed project, however, could have significant impacts on police and fire protection services and will be discussed in the EIR.

4. Biology

The proposed project would have no effect on plant or animal life on the project site or surrounding area.

5. Water

The site is currently covered by an asphalt parking lot with no surface water. Alterations to drainage patterns, therefore, will not be discussed in the EIR.

6. Hazards

The proposed project would not be affected by hazardous uses or health hazards in the area nor would there be a potential for health hazards.

III. ENVIRONMENTAL EVALUATION CHECKLIST

A. GENERAL CONSIDERATIONS:	Yes	Maybe	No	N/A	Disc.
1. Would the project conflict with objectives and policies in the Comprehensive Plan (Master Plan) of the City?			X		X
2. Would the project require a variance, or other special authorization under the City Planning Code?	X				X
3. Would the project require approval of permits from City Departments other than DCP or BBI, or from regional, state or federal agencies?	X				X
4. Would the project conflict with adopted environmental plans and goals?			X		X

The above matters require discussion in the EIR.

B. ENVIRONMENTAL IMPACTS:

1. Land Use. Would the proposed projects:	Yes	Maybe	No	N/A	Disc.
a. Be different from surrounding land uses?		X			X
b. Disrupt or divide the physical arrangement of an established community?			X		X

These matters require discussion in the EIR.

2. Visual Quality and Urban Design. Would the proposed project:	Yes	Maybe	No	N/A	Disc.
a. Obstruct or degrade any scenic view or vista open to the public?		X			X
b. Reduce or obstruct views from adjacent or nearby buildings?	X				X
c. Create a negative aesthetic effect?		X			X
d. Generate light or glare affecting other properties?		X			X

These matters require discussion in the EIR.

3. Population/Employment/Housing: Would the proposed project:

	Yes	Maybe	No	N/A	Disc.
a. Alter the density of the area population?	X				X
b. Have a growth-inducing effect?	X				X
c. Require relocation of housing or businesses, with a displacement of people, in order to clear the site?			X		
d. Create or eliminate jobs during construction and operation and maintenance of the project?	X				X
e. Create an additional demand for housing in San Francisco?	X				X

These matters require discussion in an EIR.

4. Transportation/Circulation. Would the construction or operation of the project result in:

a. Change in use of existing transportation systems (transit, roadways, pedestrian ways, etc.)?	X				X
b. An increase in traffic which is substantial in relation to existing loads and street capacity?		X			X
c. Effects on existing parking facilities, or demand for new parking?	X				X
d. Alteration to current patterns of circulation or movement of people and/or goods?	X				X
e. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?		X			X
f. A need for maintenance or improvement or change in configuration of existing public roads or facilities?		X			X
g. Construction of new public roads?			X		X

These matters require discussion in an EIR.

5. Noise	Yes	Maybe	No	N/A	Disc.
a. Would the proposed project generate noise levels in excess of those of those currently existing in the area? (during construction)	X				X
b. Would existing noise levels impact the proposed use?			X		
c. Are Title 25 Noise Insulation Standards applicable?			X		

These matters require discussion in the EIR.

6. Air Quality/Climate. Would the proposed project result in:

	Yes	Maybe	No	N/A	Disc.
a. Violation of any ambient quality standard or contribution to an existing air quality violation?		X			X
b. Exposure of sensitive receptors to air pollutants?		X			X
c. Creation of objectionable odors?			X		
d. Burning of any materials including brush, trees, or construction materials?			X		
e. Alteration of wind, moisture, or temperature (including sun shading effects), or any change in climate, either locally or regionally?	X				X

Construction and operation of the proposed project would not create objectionable odors nor would they involve burning of any materials. Construction activities would generate dust emissions from the action of wind over exposed earth surfaces. Such emissions could be suppressed by about 50% by twice daily watering of exposed earth surfaces. Dust emissions from the loads on haul trucks could be suppressed by the use of tarpaulins or other covers.

Air quality impacts and localized impacts on wind will be evaluated in the EIR.

7. Utilities and Public Services. Would the proposed project:	Yes	Maybe	No	N/A	Disc.
a. Have an effect upon, or result in a need for, new or altered governmental services in any of the following?			X		
fire protection			X		
police protection			X		
schools			X		
parks or other recreational facilities			X		
maintenance of public facilities			X		
power or natural gas			X		
communications systems			X		
water			X		
sewer/storm water drainage			X		
solid waste collection and disposal			X		

The proposed development would increase the building area on the site and the number of persons using the project area and could increase the fire hazard. The project would incorporate more extensive fire protection measures than most existing buildings in the area, to comply with the more stringent building code standards now in effect. The project would not require additional fire department personnel or equipment. Water for fighting fires would be available to the project from both the domestic and high-pressure water systems on the site;[1] a fire department high-pressure hydrant is located on the property at the east end of Green Street. Improvements erected on this property must provide for adequate access at all times to the main supplying this hydrant, and to the hydrant; access is required for use of this hydrant as well as for maintenance work. Response time to the site would be three to five minutes. The project sponsor would insure 24 hour a day access to the hydrant.

The proposed Embarcadero Terraces development would increase population and property on the site, which could increase crime. Appropriate mitigation measures (alarms, adequate lighting in entry ways, closed-circuit camera systems, security personnel, etc.) would be incorporated into the project. Additional personnel or equipment would not be required by the police department for the project; however, cumulative growth in the area could increase the demand for police services.[2]

The proposed office portion of the project would create a demand for about 120 dwelling units in the City, according to the formula of the Department of City Planning. It is not anticipated that the project would generate more than 20 to 25 school-age children. The San Francisco Unified School District could easily accommodate those numbers in providing educational services.[3]

The development is in the vicinity of Coit Tower, Levi's Plaza and Walton Park; this first is City-owned and the latter are privately maintained. It is not anticipated that the project would generate excessive demand on parks or other recreational facilities in the City or have any direct effect on the maintenance of public facilities.[4]

There would be a net increase in the consumption of energy generated by the proposed development. The existing electric facilities in Green Street may require some modification to accommodate the project. The existing gas distribution system in the area may need reinforcement for the project. PG&E does not anticipate difficulty in providing the required amount of natural gas or electricity for the project.[5] The project sponsor has stated that the project would conform to California Energy Commission standards for residential and nonresidential buildings (Title 24 of the California Administrative Code).

There would be increased demand for communication systems generated by the proposed development. Underground conduit located in the vicinity of the site would be sufficient for Pacific Telephone to provide service to the proposed project.[6]

The development would result in water consumption at the site of approximately 17,150 gallons per day (gpd). There is a six-inch water main on Union Street and an eight-inch main on Front Street. These are of adequate size to serve the demands of the proposed project, and the San Francisco Water Department does not anticipate any problems in the supply of water.[7]

The amount of wastewater generated by the project would be about the same as the water consumed. There is a 2-foot-6-inch by 5-foot-6 inch concrete box sewer on Front Street which would adequately handle increased surface flows as well as storm drainage. It is not anticipated that the City would have any difficulties in providing services to the site.[8]

The proposed office building would generate about 1,400 pounds of solid waste each work day. The Golden Gate Disposal Company would remove solid waste and does not anticipate problems in meeting the demand generated by the proposed development.[9] The project sponsor would encourage the recycling of materials such as glass, metal, paper products and newspaper.

With the exception of possible effects from cumulative development in the project area, the project would not have a significant effect on utilities and public services and these matters do not require further discussion in the EIR.

---

[1] Chief Ed Murphy, Support Services, San Francisco Fire Department, letter communication, May 12, 1982.

[2] Sergeant Paul Libert, Planning and Research, San Francisco Police Department, letter communication, May 6, 1982.

[3] Robert Walker, Manager, Student Assignments Office, San Francisco Unified School District, telephone communication, March 3, 1982.

[4] Jim Rogers, Assistant Superintendent of Parks, Recreation and Park Department, telephone communication, May 12, 1982.

[5] William V. McIntosh, Power Engineer, Pacific Gas and Electric Company, letter of May 13, 1982.

[6] G. F. Parish, Manager Engineering, Pacific Telephone and Telegraph Company, letter of May 21, 1982.

[7] Cy Wentworth, Water Estimator, San Francisco Water Department City Distribution Division, telephone conversation, May 12, 1982.

[8] Mervin Francies, Engineering Associate II, San Francisco Clean Water Program, telephone conversation, May 12, 1982.

[9] Fiore Garbarino, Service Manager, Golden Gate Disposal, telephone conversation, May 12, 1982.

8. Biology	Yes	Maybe	No	N/A	Disc.
a. Would there be a reduction in plant and/or animal habitat or interference with the movement of migratory fish or wildlife species?			X		X
b. Would the project affect the existence or habitat of any rare, endangered or unique species located on or near the site?			X		X
c. Would the project require removal of mature scenic trees?			X		X

The proposed development site currently has a paved parking lot on it. There are no plant or animal habitats on the site. It is expected that birds would be attracted to the site after project implementation because of the landscaping proposed. This matter does not require further discussion in the EIR.

9. Land. (topography, soils, geology) Would proposed project result in or be subject to:					
a. Potentially hazardous geologic or soils conditions on or immediately adjoining the site (slides, subsidence, erosion, and liquefaction)?		X			X
b. Grading (consider height, steepness and visibility of proposed slopes; consider effect of grading on trees and ridge tops)?	X				X
c. Generation of substantial spoils during site preparation, grading, dredging or fill?	X				X

These matters require discussion in the EIR.

10. Water. Would the proposed project result in:					
a. Reduction in the quality of surface water?			X		
b. Change in runoff or alteration to drainage patterns?			X		
c. Change in water use?	X				X
d. Change in quality of public water supply or in quality or quantity (dewatering) of groundwater?		X			X

There is no surface water at the site. The site is currently impermeable, covered by an asphalt parking lot. The proposed project would provide for a more permeable site and drainage would be more efficient. Storm water would continue to drain into the combined City drain/sewer system. These matters require no further study in the EIR.

There would be an increase in water use on site and project construction would require dewatering. These matters will be evaluated in the EIR.

11. Energy/Natural Resources. Would the proposed project result in:	Yes	Maybe	No	N/A	Disc.
a. Any change in consumption of energy?	X				X
b. Substantial increase in demand on existing energy sources?		X			X
c. An effect on the potential use, extraction, conservation or depletion of a natural resource?		X			X

These matters will be discussed in the EIR.

12. Hazards. Would the proposed project result in:

a. Increased risk of explosion or release of hazardous substances (e.g., oil, pesticides, chemicals or radiation), in the event of an accident, or cause other dangers to public health and safety?			X		
b. Creation of or exposure to a potential health hazard?			X		
c. Possible interference with an emergency response plan or emergency evacuation plan?			X		

It is not anticipated that the proposed project would result in any increased risk of explosion or release of hazardous substances.

An evacuation and emergency response plan would be developed by the project sponsor or building management staff, in consultation with the Mayor's Office of Emergency Services, to ensure coordination between the City's emergency planning activities and the project's plan and to provide for building occupants in the event of an emergency. The project's plan would be reviewed by the Office of Emergency Services and implemented by building management prior to final occupancy of the structure.[1] These matters require no further discussion in the EIR.

---

[1] Michael Blumenthal, Project Sponsor, telephone conversation, July 21, 1982.

	Yes	Maybe	No	N/A	Disc.
13. Cultural. Would the proposed project:					
a. Include or affect a historic site, structure, or building?	X				X
b. Include or affect a known archaeological resource or an area of archaeological resource potential?	X				X
c. Cause a physical change affecting unique ethnic or cultural values?		X			X

There are no buildings on the project site. Because of the site's location in the northeastern waterfront area, these matters require further study in the EIR.

C. MITIGATION MEASURES:	Yes	No	Disc.
a. Are mitigation measures included in the project?	X		X
b. Are other mitigation measures available?	Possible if need is identified		

Mitigation measures for the project will be discussed in the EIR.

D. ALTERNATIVES:	Yes	No	Disc.
a. Were alternatives considered:	X		X

Several alternatives to the proposed project were under consideration.

- No Project Alternative would address leaving the project site in its present state. This would allow development of the site at some future time. Also discussed under this alternative would be the effect of locating the proposed project in another Bay Area location.

- Alternative Design Complying with Planning Code would address a project which would require no Conditional Use authorization. The project would include all required parking on-site and would be a smaller office structure or a warehousing facility.

- Mixed-Use Alternative would address an alternative which would meet the housing requirement generated by the proposed office development by placing all or part of the housing on-site.

- Maritime Use Alternative would address possible use of the site for shipping and cargo handling. It should be that noted that the Port of San Francisco's Adopted Maritime Plan designates this site for non-maritime revenue producing use.

- Alternative Building Designs were considered, and discussed by representatives of the Architect, the Planning and Development Consultant, the EIR consultant and the Office of Environmental Review.[1] Alternative designs were rejected because the irregularly-shaped lot would recessitate a similar footprint for any alternative structure of this size.

The above alternatives will be discussed in the EIR for the project.

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[1] Meeting held April 22, 1982 at Office of Environmental Review, 45 Hyde Street, San Francisco, CA 94102

E. MANDATORY FINDINGS OF SIGNIFICANCE:	Yes	No	Disc.
1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal, or eliminate important examples of the major periods of California history or prehistory?	X	_	X

	Yes	No	Disc.
2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	_	X	_
3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects?)	X	_	X
4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?	_	X	_
5. Is there a serious public controversy concerning the possible environmental effect of the project?	_	X	_

The matters in items 1 and 3, above, will be discussed in the EIR for this project.

On the basis of this initial evaluation:

____ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

____ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers____, in the discussion have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

✓ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Robert W. Passmore
Assistant Director-Implementation

for

Dean Macris
Director

Date: 8/3/82

APPENDIX B

ARCHAEOLOGICAL REPORT

ARCHEO-TEC
Consulting Archaeologists
114 Wilding Lane
Oakland, California 94618
(415) 658-3109

Mr. Stu During
Environmental Impact Planning Corporation
319 Eleventh Street
San Francisco, California 94103

8 July 1982

Dear Mr. During:

The following pages contain an assessment of the potential for significant cultural resources existing within the confines of the proposed Embarcadero Terraces Development project in San Francisco. The subject parcel consists of a single city block along the northeastern waterfront bounded by the Embarcadero, Front, Union and Green streets; it is shaped like an irregular rhomboid (see Figure 1). The research upon which this report is based consisted of an archival survey of pertinent documentary sources and the placement of twelve archaeological mechanical test borings within the subject parcel. It should be pointed out at the onset that this report does not attempt to provide an overview of the development of San Francisco's northeastern waterfront: such documentation can be obtained through consultation of any number of recent historical and archaeological works on the subject (see, for example, Olmsted et al 1977; 1978, Olmsted and Olmsted 1978, Pastron and Prichett 1979;1981, Pastron et al 1981). The present research specifically focuses upon the potential for cultural resources existing within the single block of the Embarcadero Terraces development project.

Recent archival research had demonstrated that the most important cultural objects likely to be buried in landfill along the San Francisco waterfront are the wooden hulks of nineteenth century sailing vessels. During the early days of the Gold Rush, a forest of masts and spars could be seen on the waters of the San Francisco Bay. A "List of Vessels Remaining in the Port of San Francisco" published in the Alta California on June 6, 1850, provides the name, tonnage, rig and port of last registration of no less than 526 vessels ranging from little sloops and schooners from such distant ports as Sydney or New York to the big steamship Tennessee, which was in San Francisco that day. Throughout the hectic filling and building that characterized the Gold Rush period (1848-1857), it is estimated that between 25 and 75 wooden ships were buried beneath the rapidly advancing city front (Olmsted et al 1978:39). Some of these vessels, like the famous Niantic-- which came to light during construction at the intersection of Clay and Sansome streets in June, 1978-- had served as landlocked storeships during the early days of the Gold Rush (Alta California, August 9, 1849, Delgado 1979a;1979b).

Other Gold Rush vessels were ingeniously used as bulwarks for some of the wharves and piers that sprang up like magic during the late 1840s and 1850s (Alta California, July 10, 1852): the remains of such a hulk were uncovered near the intersection of Filbert and Battery streets during archaeological research in 1979 and 1980 (Pastron and Prichett 1979;1980, Olmsted et al 1980). Some Gold Rush ships were utilized to mark the property lines of still submerged, but obviously valuable, water lots (Olmsted et al 1977:447-456), and a few vessels lingered on in active service as decaying scows until the close of the nineteenth century when they finally burned and were removed or covered over (Olmsted et al 1981:107-250).

While many buried nineteenth century hulks were cut up, salvaged and removed from the waterfront landfill long ago, many still rest beneath the surface of the contemporary landscape. This fact is exemplified by the discovery of the hulk of the Apollo during construction in about 1925 (Olmsted et al 1977:458-459) and by the excavation within the last five years of another three vessels during the course of waterfront development (Pastron and Prichett 1980, Olmsted et al 1980). The approximate locations of many of these hulks are known from historical sources, as shown on the map prepared by the San Francisco Maritime Museum during the 1960s. More recent research has allowed historians to pinpoint the remnants of San Francisco's Gold Rush fleet with even greater precision (Delgado 1980). Yet, our knowledge of the subject is far from comprehensive, and it is certain that the precise resting places, indeed, even the very existence of many entombed Gold Rush hulks along the waterfront can only be speculated about.

Archival research suggests that the remains of one, or perhaps more, Gold Rush vessels may lie within, or adjacent to, the Embarcadero Terraces subject parcel. It must be stressed, however, that the archival data is far from conclusive; the documentary sources on the subject are often contradictory or ambiguous and the limited evidence provides tentative conclusions at best. The storeship Philip Hone is mentioned in the Alta California edition of June 5, 1882, in a series of articles entitled "Reminiscenses", as lying a little south of Union Street. This tentative placement of the hulk of the Philip Hone must be questioned since the same article indicates that the remains of the vessel lay on a lot adjacent to Flint's Warehouse, which we know was located near the intersection of Sansome and Greenwich streets, well to the northwest of the Embarcadero Terraces project area. Also, the Alta California article contains some confusion about the dimensions of the Philip Hone. The author of the piece describes the vessel's displacement as about 500 tons, While the Alta California's Harbormaster's List of June 6, 1850, notes a bark called Philip Hone displacing 291 tons and registered from New York. Hence, there is some ambiguity about the identity and the location of the vessel described in the Alta California article (see also Olmsted et al 1977: 457).

Additional research conducted in 1977 by historian Roger Olmsted has suggested that a location of Front Street south of Union is a reasonable possible resting place for the remains of the Philip Hone. This hypothesis, as illustrated in Olmsted *et al* 1977:521, would place all or part of the hulk immediately to the west of the western perimeter of the Embarcadero Terraces project area. Of course, such a hypothesis must be considered as tentative, and if the hulk of the bark Philip Hone does lie in the area of Front Street between Green and Union, it is quite possible that all or part of the vessel may actually lie within the confines of the present project area. Historian Roger Olmsted noted:

> An *Alta California* advertisement of September 6, 1852, has the storeship Philip Hone for rent, near Law's Wharf. Law's Wharf can be seen on the 1853 Coast Survey Chart as being approximately at the intersection of Front and Union streets. It should be noted that the 12 and 18 foot sounding lines were very close to shore at this point, which implies that if the sunken Philip Hone were visible as fill took place she must have been close in herself-- no further out than the line of Front Street (Olmsted *et al* 1977:457).

Further confusion arises when one considers the results of a later archival survey of the northeastern waterfront conducted during the spring of 1978 in connection with the Levi's Plaza development project. This research cites an article in the *Alta California*, which notes that in 1852 the storeships Chester, Caladonia, Dalmatia, Dryade, Envoy, Mersey, Orion, Othello (in stream), Philip Hone and Rhone lay "near Law's Wharf (quoted in Olmsted *et al* 1978:42). Using the best available data, Roger Olmsted recalculated the most likely resting place of the Philip Hone, arriving at the conclusion that the hulk possibly lay on a lot adjacent to the Brick Warehouse, near the intersection of Union and Battery streets (Ibid:87). This would place the vessel between 150 and 200 feet to the west of the previously hypothesized location along the line of Front Street. Olmsted estimated that the hulk of another storeship, tentatively identified as the Rhone, lay to the east of Cunningham's Warehouse, along the line of Front Street, immediately to the west of the western perimeter of the Embarcadero Terraces project area (Ibid). This location would roughly correspond to the hypothesized position of the Philip Hone in Olmsted *et al* 1977:521. The possibility that the remains of one or more of the above named storeships lie within or adjacent to the present project area cannot be ruled out on the basis of existing archival data. In summary, the documentary sources do not conclusively suggest that a Gold Rush hulk lies within the Embarcadero Terraces project area: on the other hand, the data by no means indicate that such a possibility would be unlikely. Many Gold Rush storeships were once situated in the vicinity of Front Street between Green and Union, and it is possible that the remains of one or more of these vessels *may* still lie beneath the surface of the contemporary city along this portion of the waterfront.

With the possible exception of one or more Gold Rush hulks, documentary sources do not point to the likelihood of any potentially significant cultural resources existing beneath the ground surface of the present project area. As noted above, Law's Wharf can be seen at the foot of Union Street, to the west of the present subject parcel, on the 1853 U.S. Coast Survey Chart. The first of San Francisco's two seawalls was begun in September, 1867. One section ran along Front Street between Union and Vallejo streets, a distance of 650 feet (Dow 1973:53). Filling of the Embarcadero Terraces subject parcel began after this date. A detailed photographic panorama of the northeastern waterfront reveals that much of the eastern half of the project area had still not been filled by 1883 (Olmsted et al 1977: plate 20, opposite page 515). The Embarcadero Terraces subject parcel lies to the west of Section 5 of the second San Francisco seawall, which was erected in 1885 (Pastron et al 1981: map 1.01, opposite page 6). Final filling of the project area occurred shortly after the completion of this section of the Great Seawall. The 1887 Sanborn Insurance Company map shows the subject parcel being utilized by the San Francisco Pine Lumber Company as an open storage area convenient to the foot of the Union Street Wharf (Olmsted et al 1977:523). A boat yard and a coal shed existed on the northern third of the subject parcel in the same year (Ibid). None of this information suggests any great likelihood of encountering potentially significant cultural resources within the project area dating from the 1880s or 1890s.

Previous research indicates that the likelihood of finding National Register caliber archaeological resources in the eastern half of the subject parcel (toward the Embarcadero) is not great. The 1977 archival survey of the northeastern waterfront commissioned by the San Francisco Wastewater Management Program has suggested that some cultural materials may have been deposited beneath the waters of the bay during the Gold Rush (1848-1857) or City Building (1858-1880) periods; regular dredging of the area during the second half of the nineteenth century, however, would have, in all likelihood, removed the majority of any such deposits (Ibid:546). This observation is confirmed by a body of objective evidence. In 1978, as part of the archaeological research conducted for the San Francisco Wastewater Management Program, a series of exploratory borings was placed along the Embarcadero between Jackson and North Point streets. Three of these mechanical probes were placed between Davis and Green streets to test the unlikely hypothesis that the hulk of the Philip Hone lay as far east as the Embarcadero (Pastron 1978:37-45, Olmsted et al 1977:566). As expected, none of these probes produced any trace of a buried Gold Rush hulk. In fact, none of the three borings yielded substantial quantities of cultural remains of any sort. Although the three test borings were excavated to depths ranging between 23 and 30 feet, only 14, 21 and 20 cultural objects were recovered from the respective probes (Pastron 1978:81-86). The excavated specimens consisted primarily of broken bricks, small chunks of wood, an occasional scrap of metal or leather and fragments of glass and ceramic ware. No specimens were found intact and the only identifiable cultural items consisted of the stem of a clay smoking pipe and two fragments of "ironstone" ceramic ware bearing the stamp of the manufacturing company. A tentative dating to the late nineteenth or early twentieth centuries seems quite appropriate for the small assemblage of cultural objects recovered from the three test borings. In short, the subsurface cultural resources along this stretch of the Embarcadero appear sparse and altogether unimpressive.

Archaeological Testing at Embarcadero Terraces

In an attempt to determine with greater precision whether potentially significant cultural materials, particularly the remains of one or more buried Gold Rush ships, lay within the subject parcel, twelve mechanical exploratory borings were placed within the Embarcadero Terraces project area on Saturday, June 26, 1982. The location of these twelve test probes can be seen in Figure 1, below. A project datum was established at the southwestern corner of the subject parcel, and all subsequent measurements were made from this point. Each boring was excavated with a 24 inch auger attached to a truck-mounted drill rig. Each boring was excavated to a minimum depth of 20 feet. In each boring, the auger proceeded downward in arbitrary increments of 24 inches. With every 24 inches of downward progress, the auger was removed from the steadily deepening hole and all of the excavated dirt was carefully examined by Dr. Allen G. Pastron, the archaeological investigator. All of the cultural materials encountered in each boring were inspected and logged by Dr. Pastron in the field, and all potentially diagnostic or chronologically sensitive specimens were collected, labelled and bagged for later laboratory analysis. Detailed notes were taken regarding the nature and composition of the subsurface deposits existing within the Embarcadero Terraces project area. These findings are summarized below in the form of individual boring logs. While Dr. Pastron cannot claim professional expertise in the field of geology, the information tabulated in the appended boring logs presents a relatively accurate portrayal, in layman's terms, of the character of the subsurface deposits encountered by the twelve archaeological probes placed within the Embarcadero Terraces project area.

As Figure 1 clearly shows, the bulk of the test borings were placed within the western half of the subject parcel: six of the twelve probes were located as close to the line of Front Street as possible. This was because previous test borings in the area had shown that few cultural resources were likely to be found near the Embarcadero (Pastron 1978:95) and because all of the available archival data suggested that any Gold Rush hulks existing on or near the property would be encountered within the western portion of the site.

Previous archaeological research along the San Francisco waterfront has allowed Dr. Pastron to establish a series of predictive criteria that are useful in determining whether a mechanical test boring has intersected the remains of a wooden sailing vessel. At Levi's Plaza, four such criteria were set forth: 1) identification of the types of wood-- generally oak and other hardwoods-- commonly used in the construction of Gold Rush ships; 2) retrieval of sufficient quantities of such wood to suggest the presence of a buried ship; 3) an appropriate stratigraphic relationship between the wood and surrounding landfill and the original bay bottom; 4) the retrieval of other corroborating artifactual evidence suggestive of the presence of a hulk. This might include such items as ballast stones or metal ship fittings (Pastron and Prichett 1979:15). The identification of one or more of these crucial diagnostic indicators would signal the possible discovery of a buried wooden ship. If all of these elements were positively identified, the presence of a buried ship hulk would be all but certain.

In the summer of 1979, Dr. Pastron placed a series of archaeological test borings within Levi's Plaza and found indisputable proof of the presence of a buried hulk near the intersection of Filbert and Battery streets. All of the above mentioned elements required for the positive identification of a buried hulk were encountered and noted. In addition to unearthing a considerable quantity of oak, the test borings recovered two diagnostic artifacts associated with the wooden hulk. One was a rectangular granite ballast stone which had been used to add weight to the vessel when the hold was empty (Ibid:71). The second artifact was the medial portion of a trunnel, or "tree nail", a hand-hewn, cylindrical wooden dowel or peg used to fasten the oaken hull plates of the ship to the ribs and other structural members (Olmsted *et al* 1978:86, Pastron and Prichett 1979:46). Trunnels were extremely common components of wooden sailing ships during the eighteenth and nineteenth centuries.

The test borings at Embarcadero Terraces did *not* produce the kind of conclusive evidence for the presence of a buried hulk that had been unearthed at Levi's Plaza in 1979. However, the borings did produce data which *hinted* at the possible presence of a buried hulk beneath the surface of the ground. Let us examine the evidence unearth at Embarcadero Terraces beginning with the wood samples recovered from the twelve test borings.

While some wood was encountered in every test probe with the exception of Boring 12, oak was recovered from Borings 7, 8 and 9. In every case, the oak was encountered between depths of 8 and 11 feet, near the interface of the nineteenth century landfill and the underlying bay mud. If these pieces of oak were parts of a sunken hulk, they were encountered in the approximate stratigraphic position where one would expect them to be. Also, although the wood was often badly chewed up by the action of the probing auger, some of the specimens seem to have derived from large, carefully shaped timbers, rather than from smaller pieces of scrap wood. This observation would also support a hypothesis that a buried hulk had been encountered. On the other hand, some contradictory evidence must be considered. None of the three borings in question produced oak in the massive quantities which had signalled the presence of a buried hulk at Levi's Plaza. For example, a single boring in Block B of Levi's Plaza yielded in excess of 43 kilos of oak (Pastron and Prichett 1979:127). No more than 3-5 kilos of hardwood were recovered from any of the three borings which yielded oak at Embarcadero Terraces. There are several alternative explanations to account for this relatively small quantity of oak. If the three test probes, all located on a north-south axis 30 feet east of the project datum, had clipped the edge of the ship, one could expect smaller quantities of oak than if the probes had penetrated the center of a thick oaken member. Conversely, it must be kept in mind that that in 1887 the subject parcel was used as an open storage area by the San Francisco Pine Lumber Company, and much of the wood recovered during the present archaeological testing program might derive from this association. In summary, the presence of oak in three contiguous borings at an appropriate stratigraphic level suggests the presence of a buried hulk. However, this tentative conclusion is weakened by the relatively small amounts of oak extracted from Borings 7, 8 and 9, and the possibility that the oak could have derived from some source other than the remains of a Gold Rush hulk.

Of possibly greater significance than the oak encountered in the three test probes was the cylindrical wooden dowel recovered from the 8-10 foot level of Boring 7. Made of oak or some related hardwood, this dowel measures 12¼ inches long and slightly more than 1 inch in diameter. Upon initial examination, this object appeared to be one of the trunnels, or "Tree nails" mentioned above. To confirm this hypothesis, Dr. Pastron consulted with Mr. Harlan Soeten, retired curator of the San Francisco Maritime Museum. Mr. Soeten concurred with Dr. Pastron in the hypothesis that the object in question was probably a trunnel. He pointed out however, that the finding of a wooden trunnel should not be taken as an absolute indicator of the nearby presence of a buried hulk. Soeten pointed out that trunnels were common artifacts along the nineteenth century waterfront and one could have come to rest beneath the present day Embarcadero Terraces for any number of reasons. On the other hand, Dr. Pastron has previously excavated two Gold Rush hulks in San Francisco, one at King and Townsend streets in 1978 (Olmsted et al 1981:107-250), and the other at Filbert and Battery streets in 1979 (Pastron and Prichett 1979): in each case, the presence of the hulk was signalled by the recovery of a wooden trunnel in an exploratory archaeological boring (Pastron 1977:185). Hence, while the present author concurs with Mr. Soeten that a trunnel cannot be viewed as definite proof for the presence of a buried hulk, the recovery of such an artifact must be given serious consideration as a strong indicator that the remains of a subsurface wooden vessel are nearby.

To summarize, the evidence from the archaeological test borings points to the possible presence of a buried Gold Rush hulk beneath the surface of the ground at Embarcadero Terraces. The evidence, however, is by no means conclusive, and several alternative explanations have been offered for the presence of quantities of oak and a hardwood trunnel within the subject parcel.

With regard to other types of cultural resources, nothing was encountered within the Embarcadero Terraces subject parcel which appears to be potentially significant as defined by the criteria of eligibility for inclusion within the National Register of Historic Places. Fragments of glass, wood, ceramic ware, metal and brick were recovered from most of the twelve test borings. These materials appear to represent relatively isolated finds which date from the latter years of the nineteenth century or the first decades of the twentieth century. No sizeable concentration of cultural refuse and no unique or historically valuable specimens were encountered during the placement of the archaeological test borings. In conclusion, the archival survey and the archaeological testing program at Embarcadero Terraces indicated that the possible Gold Rush hulk (or hulks) on the property constituted the only cultural resources of potential significance thus far identified.

On the basis of the above conclusions, it is recommended that a limited program of pre-construction archaeological testing be undertaken within the Embarcadero Terraces project area. The purposes of the proposed research would be two-fold: 1) to determine with certainty whether the remains of one or more Gold Rush hulks lie within the confines of the project area; 2) if a positive finding is made, the archaeological procedures would determine, to the greatest extent possible, the dimensions and orientation of the vessel beneath the ground surface. To achieve these goals, the following program of archaeological investigation is proposed.

The project sponsor would select a qualified archaeological consultant to supervise the research. The archaeological research itself would consist of the placement of a series of mechanical test borings within carefully selected locations of the project area. Before the start of the program, a series of imaginary grids would be laid out over the part of the project area to be tested. The design of this grid would tentatively be as follows: grid lines would be laid out at 20 foot intervals parallel to street lines. The size of the hulk or hulks likely to be encountered within Embarcadero Terraces are crucial in determining the dimensions of the grid system to be used. Historical research has indicated that vessels of brig, brigantine size or of the bark class are the most likely to lie beneath the project site. Such ships, weighing between 200 and 500 tons, would generally exceed 100 feet in length, while the beam, at the widest point, would measure between 25 and 30 feet. Therefore, based upon these dimensions, the use of a 20 foot grid sequence would make it impossible to "leap frog" or straddle a ship during the archaeological testing program.

In order to achieve adequate coverage of the area targeted for archaeological testing, it will not be necessary to place a boring at each grid intersection. Scale models of nineteenth century vessels will be utilized to determine the exact placement of the exploratory borings within the affected portions of the project area. In addition to locating the remains of any hulks beneath the surface, the testing procedures outlined here will allow the archaeological investigator to determine the approximate dimensions and orientation of any hulks encountered beneath the ground surface.

At the conclusion of the archaeological testing program, the archaeological investigator shall submit a written report of his findings to the project sponsor. If the testing has uncovered the remains of a Gold

Rush hulk, the report shall contain recommended measures for the mitigation of adverse impacts to the cultural resources which have been encountered.

In the event that a pre-construction archaeological testing program is deemed inappropriate, it is recommended that a qualified archaeological monitor be present on site during all subsurface excavation at Embarcadero Terraces. In the event that the remains of a Gold Rush hulk are encountered during the course of construction, the on-site archaeological monitor should be authorized to direct an immediate cessation of work in the area of the discovery. Construction work within the zone of impact should not recommence until the archaeological consultant has an opportunity to carefully examine the find, evaluate its potential significance and make whatever recommendations he deems appropriate to provide for the adequate mitigation of adverse impacts to the cultural resource which has been encountered.

I hope that these remarks will be of use to you in evaluating the potential for significant archaeological resources existing within the confines of Embarcadero Terraces along the San Francisco Waterfront.

Sincerely Yours,

Allen G. Pastron Ph.D
President, Archeo-Tec

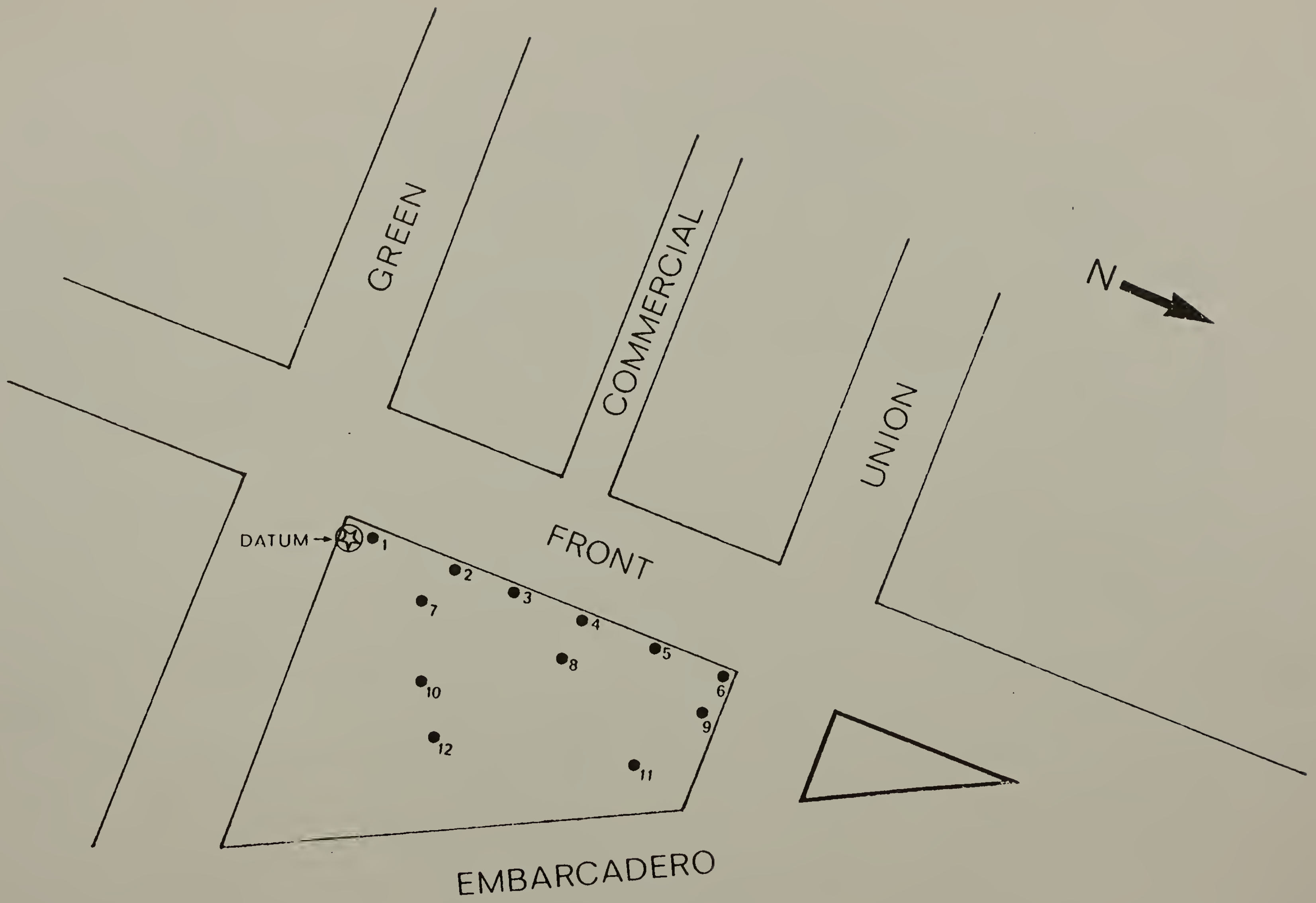

FIGURE 1: EMBARCADERO TERRACES
SITE LOCATION MAP AND PLACEMENT OF ARCHAEOLOGICAL TEST BORINGS

Embarcadero Terraces

Boring # 1

Located 23 feet north and 3 feet west of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement, followed by a layer of coarse brown sand mixed with small bits of angular rock and a few scattered pieces of wood, glass and ceramic ware.
2-4 feet	Coarse brown sand changing at about 3 feet to a gray/green sandy clay. Several large timbers encountered at a depth of 3½ feet.
4-6 feet	Gray/Green sandy clay changing to a dense, bright yellow sandy clay mixed with abundant quantities of angular, Telegraph Hill shale fill. Copious quantities of wood encountered between 4 and 5 feet.
6-8 feet	Same dense, bright yellow sandy clay mixed with abundant chunks of Telegraph Hill shale fill. Culturally sterile.
8-10 feet	Same as above level. Water encountered at 10 feet.
10-12 feet	Same as above level, except that the size and quantity of the shale fill is markedly increasing from that of the above levels. Culturally sterile.
12-14 feet	Same as above level. Angular shale fill still increasing in size and quantity. Culturally sterile.
14-16 feet	Same as above level.
16-18 feet	Same as above level.
18-20 feet	Same as above level.
	Boring abandoned at 20 feet.

Embarcadero Terraces

Boring # 2

Located 83 feet north and 3 feet west of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with a few rounded cobbles and broken bricks. Otherwise, no cultural materials observed.
2-4 feet	Light brown, coarse sand with cobbles and bits of broken brick.
4-6 feet	Sand fill becoming lighter in color; now mixed with moderate amounts of glass and ceramic fragments.
6-8 feet	Coarse brown sandy clay mixed with angular chunks of Telegraph Hill shale fill.
8-10 feet	Increasingly dense yellow/brown sandy clay mixed with increasing amounts of Telegraph Hill shale fill. Culturally sterile. Water encountered at 10 feet.
10-12 feet	Mainly baseball-sized chunks of angular Telegraph Hill shale fill mixed with a dense yellow/brown sandy clay. Culturally sterile.
12-14 feet	Same as above: the size and quantity of the shale fill is increasing markedly over above levels.
14-16 feet	Same as above level.
16-18 feet	Same as above level.
18-20 feet	Same as above level.
20-22 feet	Same as above level.
	Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 3

Located 133 feet north and 3 feet west of project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with a few broken bricks. A large railroad tie was encountered at about 1 foot in depth. It should be noted that railroad tracks cross the subject parcel in a north-south direction in the immediate vicinity of Boring 1-5.
2-4 feet	Coarse brown sand mixed with bits of brick, glass, ceramic ware and other cultural fragments. A large timber (not the above mentioned railroad tie) encountered between 3 and 4 feet in depth.
4-6 feet	Fairly homogeneous coarse brown sand fill: culturally sterile.
6-8 feet	Same coarse brown sand as above level, but now mixed with moderate amounts of angular Telegraph Hill shale and dense blue/gray clay. Culturally sterile.
8-10 feet	Gray sandy clay mixed with increasing amounts of Telegraph Hill shale. Water encountered at 9 feet. Culturally sterile.
10-12 feet	Mainly large angular chunks of Telegraph Hill shale mixed with gray sandy clay. Culturall sterile
12-14 feet	Same as above level.
14-16 feet	Same as above level: the size and quantity of the rock fill is increasing is relation to previous levels.
16-18 feet	Same as above level.
18-20 feet	Same as above level.
20-22 feet	Same as above level.
	Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 4

Located 183 feet north and 3 feet west of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with bits of gravel and rock. Culturally sterile.
2-4 feet	Same as above level.
4-6 feet	Coarse brown sand as above mixed with inclusions of bright yellow sandy clay and fist-sized chunks of angular Telegraph Hill shale fill. Culturally sterile.
6-8 feet	Same as above level.
8-10 feet	Bright yellow sandy clay and shale fill as above, now mixed with a dense gray clay. Culturally sterile. Water encountered at 9 feet.
10-12 feet	Same as above level. Culturally sterile.
12-14 feet	Same as above level: size and quantity of the shale fill increasing. Culturally sterile.
14-16 feet	Same as above level. Culturally sterile.
16-18 feet	Same as above level: size and quantity of the shale fill increasing. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
	Boring abandoned at 20 feet.

Embarcadero Terraces

Boring # 5

Located 233 feet north and 3 feet west of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand with bits of broken brick and small angular rocks throughout. A railroad tie encocountered at a depth of 1 foot.
2-4 feet	Same coarse brown sand and small angular rocks as above. Culturally sterile.
4-6 feet	An abrupt change to a bright yellow sandy clay mixed with abundant angular pieces of Telegraph Hill shale. Culturally sterile.
6-8 feet	Same as above, with the size of rocks increasing. Culturally sterile.
8-10 feet	Same as above level: size and quantity of rocks still increasing. Water encountered at 10 feet. Culturally sterile.
10-12 feet	Dense yellow sandy clay mixed with inclusions of dense gray clay and abundant chunks of Telegraph Hill shale. Culturally sterile.
12-14 feet	Same as above level.
14-16 feet	Same as above level: size and quantity of rocks still increasing. Culturally sterile.
16-18 feet	Same as above level.
18-20 feet	Same as above level.
	Boring abandoned at 20 feet.

Embarcadero Terraces

Boring # 6

Located 283 feet north and 3 feet west of the project datum

This boring was excavated with a 24 inch auger.

Depth	Composition of Soil
0-2 feet	asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks and bits of broken brick. Railroad tie encountered at about 1 foot in depth and many rounded cobblestones directly below the railroad tie.
2-4 feet	Coarse brown sand laden with cobblestones and 1 brick.
4-6 feet	Heavy layer of cobblestones mixed with coarse brown sand described above. No other cultural materials.
6-8 feet	Same as above level.
8-10 feet	Cobblestones finally diminishing. An abrupt change to a heavy, dense gray clay mixed with some angular rocks. Water at 10 feet. Culturally sterile.
10-12 feet	Same as above level.
12-14 feet	Same as above level: size and quantity of the rock fill increasing. Culturally sterile.
14-16 feet	Same as above level.
16-18 feet	Same as above level.
18-20 feet	Same as above level: size and quantity of the rock fill still increasing. Culturally sterile.
20-22 feet	Same as above level.

Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 7

Located 58 feet north and 30 feet east of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks and flecks of broken brick.
2-4 feet	Same as above level.
4-6 feet	Fine brown sand mixed with small angular rocks and some window glass and fragmentary ceramic ware.
6-8 feet	Same as above level: fine brown sand mixed with small angular rocks and broken window glass and ceramic ware,
8-10 feet	An abrupt change to a dense gray/black clay (bay mud). Water encountered at 10 feet. Culturally sterile.
10-12 feet	Same dense gray/black clay now mixed with abundant quantities of large, angular chunks of Telegraph Hill shale. Large amounts of wood encountered at 11 feet.
12-14 feet	Same dense gray/black clay mixed with large angular chunks of Telegraph Hill shale as above. Less wood than encountered in the previous level.
14-16 feet	Same dense gray/black clay mixed with large angular chunks of Telegraph Hill shale as above. Wood has now disappeared entirely.
16-18 feet	Same as above level. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
20-22 feet	Same as above level. Culturally sterile.

Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 8

Located 158 feet north and 30 feet east of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks.
2-4 feet	Coarse brown sand mixed with small angular rocks and bits of broken bricks.
4-6 feet	Change to a medium brown fine-grained sand mixed with small angular rock and bits of broken bricks. At 5½ feet, the auger encountered a layer of white lime or plaster that appeared to be about 6 inches to 1 foot thick.
6-8 feet	Once through the lime, the auger encountered a fine-grained medium brown, almost homogeneous sand. Culturally sterile.
8-10 feet	An abrupt change to a dense gray/black clay mixed with large angular chunks of Telegraph Hill shale. A large wooden timber encountered at a depth of 9 feet. Water encountered at 10 feet.
10-12 feet	Same as above level: dense gray/black clay mixed with large angular chunks of Telegraph Hill shale. No further evidence of the wooden timber encountered in the previous level. Culturally sterile.
12-14 feet	Same as above level. Culturally sterile.
14-16 feet	Same as above level. Culturally sterile.
16-18 feet	Same as above level. Size and quantity of the shale increasing. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
20-22 feet	Same as above level. Culturally sterile.

Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 9

Located 258 feet north and 30 feet east of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks. Culturally sterile.
2-4 feet	Coarse brown sand mixed with small angular rocks. Culturally sterile.
4-6 feet	Same as avove level. Culturally sterile.
6-8 feet	Yellow sandy clay mixed with fist-sized chunks of angular Telegraph Hill shale fill. A large timber encountered at 6½ feet, as well as a nineteenth century bottle fragment.
8-10 feet	Yellow sandy clay mixed with increasingly lagre chunks of Telegraph Hill shale. Large amounts of wood encountered at 9½ feet. Water encountered at 9 feet.
10-12 feet	Basically the same as the previous level: dense yellow sandy clay mixed with abundant chunks of Telegraph Hill shale fill. Size and quantity of the shale fill increasing. No further evidence of wood. Culturally sterile.
12-14 feet	Yellow sandy clay mixed with Telegraph Hill shale as above. Sixe and quantity of rock fill increasing. Culturally sterile.
14-16 feet	Same as above level. Culturally sterile.
16-18 feet	Same as above level. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
20-22 feet	Same as above level. Culturally sterile.
	Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 10

Located 83 feet north and 70 feet east of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks, brick fragments, a round cobble, metal, glass and ceramic fragments interspersed throughout.
2-4 feet	Same as above level: coarse brown sand mixed with small angular rocks and brick fragments. Less cultural material than noted in the previous level.
4-6 feet	Dark brown sand mixed with abundant organic material and chunks of angular rock. Wood, glass and ceramic specimens still present.
6-8 feet	Same as above level. Wood present throughout level
8-10 feet	Same as above level. Presence of wood diminishing.
10-12 feet	Dark gray wet sand. Wood and other cultural debris still present.
12-14 feet	Same as above level. Considerably less wood than in the previous level. Water at 14 feet.
14-16 feet	Dense gray clay mixed with chunks of angular rock. Culturally sterile.
16-18 feet	Same as above level. Size and quantity of the rocks increasing. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
20-22 feet	Same as above level. Culturally sterile.

Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 11

Located 233 feet north and 70 feet east of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks.
2-4 feet	Coarse brown sand mixed with chunks of angular rocks. Culturally sterile.
4-6 feet	Yellow brown sandy clay mixed with abundant fist-sized chunks of angular Telegraph Hill shale. Culturally sterile.
6-8 feet	Same as above level. Water encountered at 8 feet.
8-10 feet	Mainly angular chunks of Telegraph Hill shale mixed with yellow/brown sandy clay. Culturally sterile.
10-12 feet	Same as above level. Culturally sterile.
12-14 feet	Dense gray clay mixed with Telegraph Hill shale. Culturally sterile.
14-16 feet	Same as above level. Size and quantity of the rock fill increasing. Culturally sterile.
16-18 feet	Same as above level. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
20-22 feet	Same as above level. Culturally sterile.
	Boring abandoned at 22 feet.

Embarcadero Terraces

Boring # 12

Located 183 feet north and 100 feet east of the project datum

This boring was excavated with a 24 inch auger

Depth	Composition of Soil
0-2 feet	Asphalt pavement followed by a layer of coarse brown sand mixed with small angular rocks.
2-4 feet	Coarse brown sand mixed with small angular rock and bits of brick.
4-6 feet	Dense yellow sandy clay mixed with fist-sized chunks of Telegraph Hill shale. Culturally sterile.
6-8 feet	Same as above level. Size and quantity of the rock fill increasing. Culturally sterile.
8-10 feet	Increasingly dense gray clay mixed with large angular rock. Water encountered at 10 feet. Culturally sterile.
10-12 feet	Same as above level. Culturally sterile.
12-14 feet	Same as above level. Size and quantity of the rock fill increasing. Culturally sterile.
14-16 feet	Same as above level. Culturally sterile.
16-18 feet	Same as above level. Culturally sterile.
18-20 feet	Same as above level. Culturally sterile.
	Boring abandoned at 20 feet.

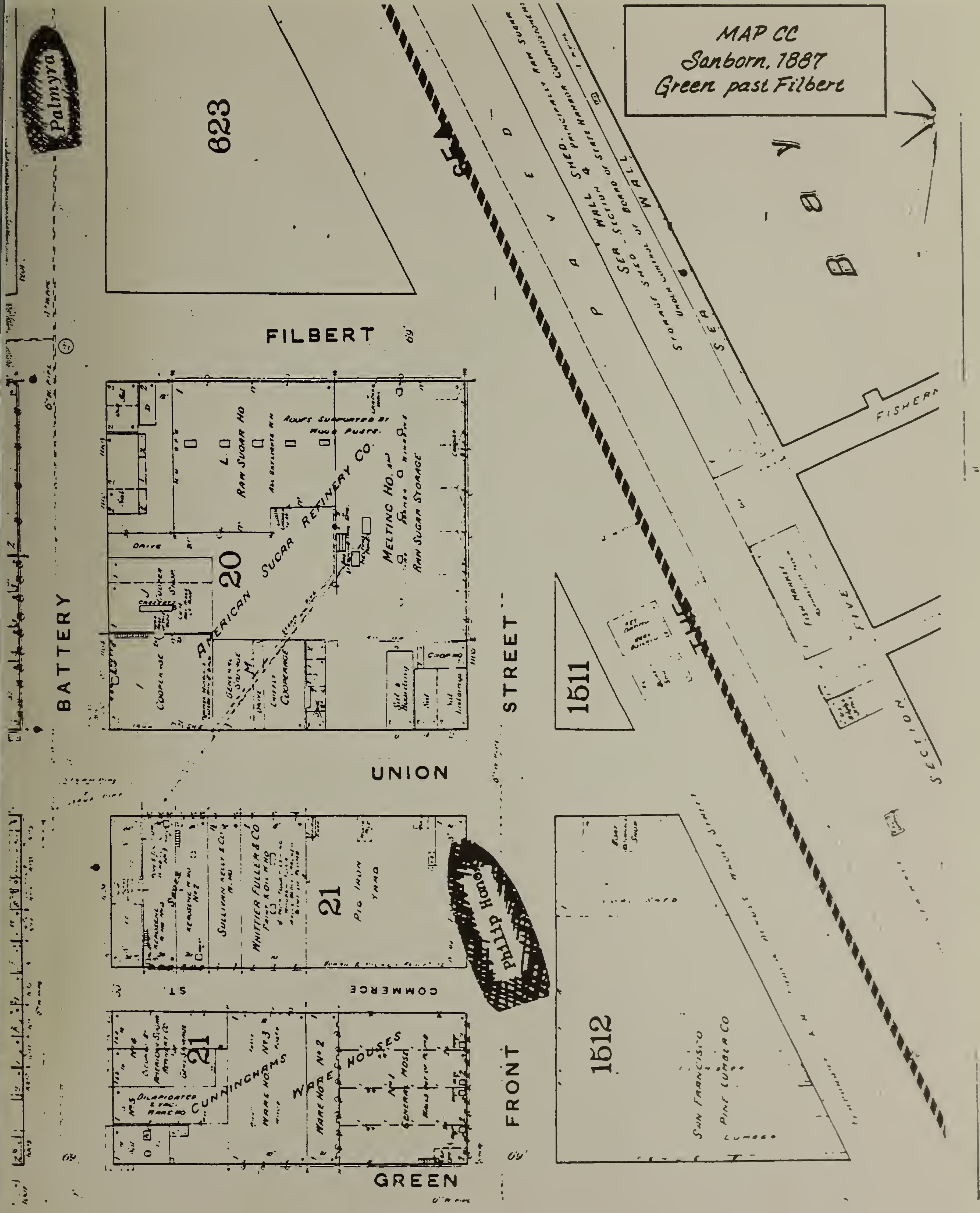

FIGURE B-2

Source: San Francisco Waterfront: Report on Cultural Resources, 1977

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Behind the Seawall: Historical Archaeology along the San Francisco Waterfront. Report in 3 volumes submitted to the San Francisco Clean Water Program.

TABLE C-1

LEVELS OF SERVICE DEFINITIONS FOR SIGNALIZED INTERSECTIONS[1]

Level of Service A

Level of Service A describes a condition where the approach to an intersection appears quite open and turning movements are made easily. Little or no delay is experienced. No vehicles wait longer than one red traffic signal indication. The traffic operation can generally be described as excellent.

Level of Service B

Level of Service B describes a condition where the approach to an intersection is occasionally fully utilized and some delays may be encountered. Many drivers begin to feel somewhat restricted within groups of vehicles. The traffic operation can generally be described as very good.

Level of Service C

Level of Service C describes a condition where the approach to an intersection is often fully utilized and back-ups may occur behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so. The driver occasionally must have to wait more than one red traffic signal indication. The traffic operation can generally be described as good.

Level of Service D

Level of Service D describes a condition of increasing restriction causing substantial delays and queues of vehicles on approaches to the intersection during short times within the peak period. However, there are enough signal cycles with lower demand such that queues are periodically cleared, thus preventing excessive back-ups. The traffic operation can generally be described as fair.

Level of Service E

Capacity occurs at Level of Service E. It represents the most vehicles that any particular intersection can accommodate. At capacity there may be long queues of vehicles waiting upstream of the intersection and vehicles may be delayed up to several signal cycles. The traffic operation can generally be described as poor.

Level of Service F

Level of Service F represents a jammed condition. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration. Hence, volumes of vehicles passing through the intersection vary from signal cycle to signal cycle. Because of the jammed condition, this volume would be less than capacity.

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[1] City and County of San Francisco, Department of Public Works, Traffic Engineering Division.

TABLE C-2

PEDESTRIAN FLOW REGIMES

Flow Regime	Walking Speed Choice	Conflicts	Average Speed Rate (P/F/M)[1]
Open	Free Selection	None	0.5
Unimpeded	Some Selection	Minor	0.5 - 2.0
Impeded	Some Selection	High Indirect Interaction	2.0 - 6.0
Constrained	Some Restriction	Multiple	6.0 - 10.0
Crowded	Restricted	High Probability	10.0 - 14.0
Congested	All Reduced	Frequent	14.0 - 16.0
Jammed	Shuffle Only	Unavoidable	16.0+

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[1] P/F/M - Pedestrians per foot of sidewalk width per minute.

Source: Boris Pushkarev and Jeffrey M. Zupan, Urban Space for Pedestrians, Massachusetts, MIT Press, 1975.

APPENDIX D

FUNDAMENTAL CONCEPTS OF ENVIRONMENTAL NOISE

This section provides background information to aid in understanding the technical aspects of this report.

Three dimensions of environmental noise are important in determining subjective response. These are:

a. the intensity or level of the sound

b. the frequency spectrum of the sound

c. the time-varying character of the sound

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or Hertz (Hz). Most of the sounds which we hear in the environment do not consist of a single frequency, but of a broad band of frequencies, differing in level. The quantitative expression of the frequency and level content of a sound is its sound spectrum. A sound spectrum for engineering purposes is typically described in terms of octave bands which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into ten segments.

Many rating methods have been devised to permit comparisons of sounds having quite different spectra. Fortunately, the simplest method correlates with human response practically as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively and severely deemphasizes the importance of frequency components below 1000 Hz, with mild deemphasis above 5000 Hz. This type of frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency midrange.

The weighting curve described above is called "A" weighting, and the level so measured is called the "A-weighted sound level," or simply "A-level."

The A-level in decibels is expressed "dBA"; the appended letter "A" is a reminder of the particular kind of weighting used for the measurement. In practice, the A-level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All U.S. and international standard sound level meters include such a filter. Typical A-levels measured in the environment and in industry are shown in Figure 1.

Although the A-level may adequately describe environmental noise at any instant in time, the fact is that the community noise level varies continuously. Most environmental noise includes a conglomeration of distant noise souces which create a relatively steady background noise in which no particular source is identifiable. These distant sources may include traffic, wind in trees, industrial activities, etc. These noise sources are relatively constant from moment to moment, but vary slowly from hour to hour as natural forces change or as human activity follows its daily cycle. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities or single vehicle passages, aircraft flyovers, etc., which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, the statistical noise descriptors L10, L50, and L90 are commonly used. The L10 is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L10 is considered a good measure of the "average peak" noise. The L50 is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period. The L50 represents the median sound level. The L90 is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period. The L90 is used to describe the background noise.

As it is often cumbersome to describe the noise environment with these statistical descriptors, a single number descriptor called the Leq is also widely used. The Leq is defined as the equivalent steady-state sound level which in a stated period of time would contain the same acoustic energy as the time-varying sound level during the same time period. The Leq is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noises become very noticeable. Further, most people are sleeping at night and are very sensitve to noise intrusion.

To account for human sensitivity to nighttime noise levels a descriptor, Ldn, (day-night equivalent sound level) was developed. The Ldn divides the 24-hour day into the daytime of 7 a.m. to 10 p.m. and the nighttime of 10 p.m. to 7 a.m. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Ldn, then, is the A-weighted average sound level in decibels during a 24-hour period with 10 dBA added to the hourly Leqs during the nighttime. For highway noise environments the Leq during the peak traffic hour is approximately equal to the Ldn.

The effects of noise on people can be listed in three general categories:

1. subjective effects of annoyance, nuisance, dissatisfaction
2. interference with activities such as speech, sleep, learning
3. physiological effects such as startle, hearing loss

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Unfortunately, there is as yet no completely satisfactory measure of the subject effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual past experiences with noise.

Thus, an important parameter in determining a person's subjective reaction to a new noise is the existing noise environment to which one has adapted: the so-called "ambient" noise. "Ambient" is defined as "the all-encompassing noise associated with a given environment, being a composite of sounds from many sources, near and far." In general, the more a new noise exceeds the previously existing ambient, the less acceptable the new noise will be judged by the hearers.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report:

1. Except in carefully controlled laboratory experiments, a change of only 1 dBA cannot be perceived.

2. Outside of the laboratory, a 3-dBA change is considered a just-noticeable difference.

3. A change in level of at least 5-dBA is required before any noticeable change in community response would be expected.

4. A 10-dBA change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse change in community response.

Source : Charles M. Salter Associates, Inc., December 1982.

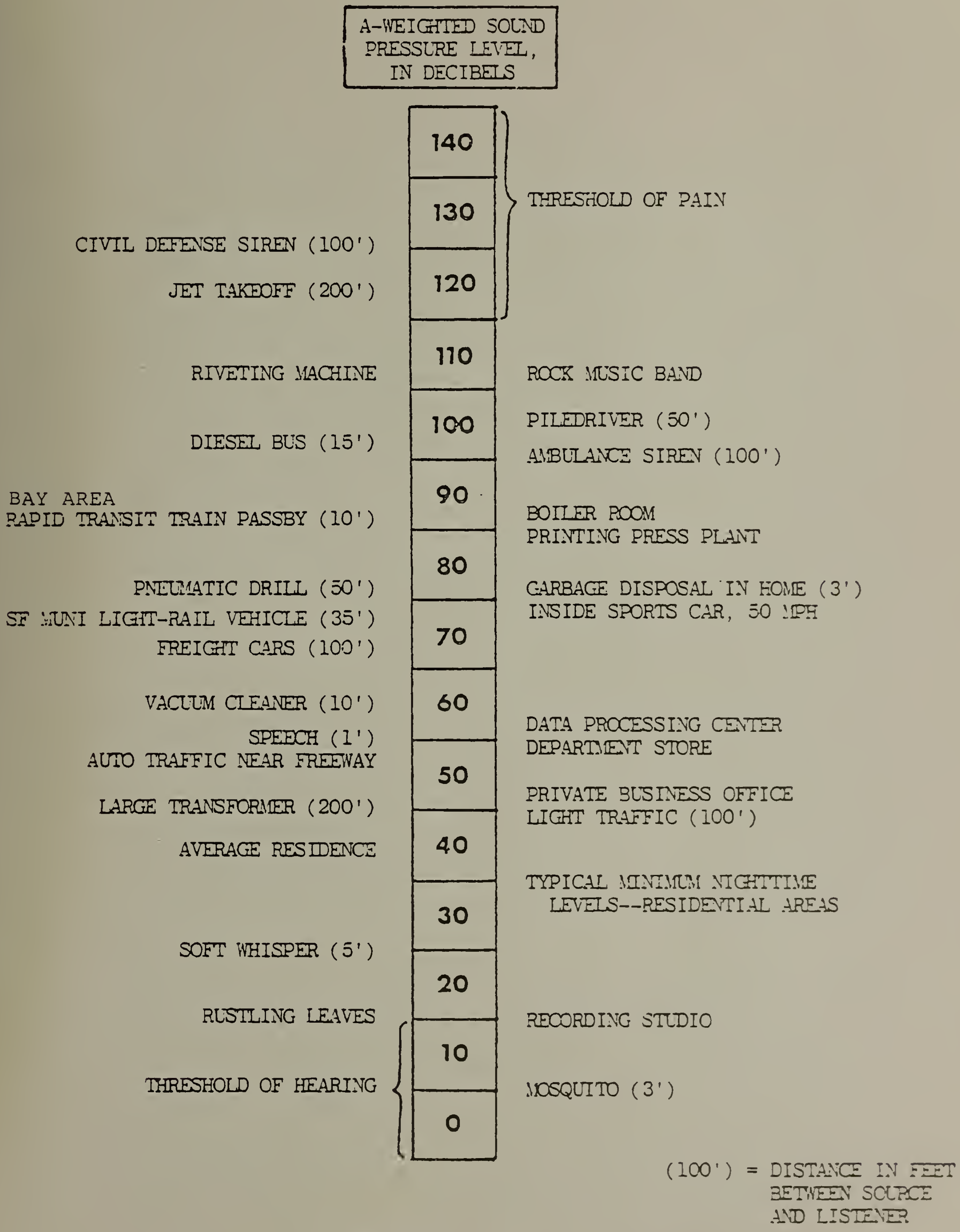

FIGURE 1: TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND INDUSTRY

APPENDIX E

CUMULATIVE TRANSPORTATION IMPACT ANALYSIS METHODOLOGY

1. Travel Demand

Travel demand from the 17.3 million gross square feet of net new cumulative office development and 589,210 gross square feet of net new cumulative retail development in downtown San Francisco has been estimated using a land-use approach for trip generation. Future travel into the downtown has been assumed to be a result of construction and occupancy of downtown office and retail space. The Office of Environmental Review of the Department of City Planning (DCP) has identified office projects in the greater downtown area as being under formal review, approved or under construction. Table F-1 in Appendix F shows the list of projects separated by review status and includes Assessor's Block number and DCP case number for each project. The information contained in this table represents the best data available from the Department of City Planning at the time of preparation of this document.

Hotel projects have not been included in the cumulative analyses because hotel uses have different peaking characteristics from office buildings and generally do not significantly affect peak-hour traffic or transit. Residential projects have not been included because residential travel in the downtown is generally in the contra-commute direction during peak-hours and because the office trip generation rate and modal split distribution are predicated on the assumption that housing would be available in the City. Thus, inclusion of residential projects would be double counting of project generated travel.

Projections of future travel have been made using trip generation rates of 17.5 person trip ends (one way trips) per 1,000 net leasable square feet or net new office space and 100 person-trips ends (pte) per 1,000 gross square feet of net new retail space.[1] Gross square feet of office space was converted to net leasable square feet by assuming an efficiency factor of 80%. The retail space has been assumed to be primarily "ground-floor retail" which would serve the office building users. Based upon survey data collected at the Embarcadero Center, approximately 45% of the travel generated by "ground-floor retail" uses has been assumed to be oriented to the office uses on-site and is already included in the office trip generation rate. Thus, 55% of the retail trip generation has been assumed to be "new" to each site.[2]

P.M. peak-hour travel from the cumulative development was assigned to modes of travel based upon the regional distribution and modal split shown in Table E-1, page A-54. During the p.m. peak hour about 20% of the office travel and 10% of the retail travel was assumed to occur. Of the office travel approximately 90% (during peak hours) was assumed to be work-related and 10% was assumed to be other travel. On a daily basis, office travel was assumed to be 57% work-related and 43% other travel.[3]

To calculate vehicle trip ends, average automobile occupancies were assumed for each regional area based upon available data. Currently, commute travel to the East Bay is about 1.8 persons per vehicle; the North Bay is about 1.5 persons per vehicle; and to the Peninsula is about 1.2 persons per vehicle.[4] San Francisco auto occupancy was assumed to be 1.4 persons per vehicle.[5]

A basic assumption in all of the transportation analyses is that existing regional distributions and modal splits would continue into the future unchanged. Thus, the implicit assumption has been made that about 40% of the future employees would live in San Francisco. If housing is not available in the City then a greater impact than noted would result on the commute corridors into the City from the North Bay, East Bay and Peninsula. If housing is not available in the City, however, the impact on the Muni would be less than noted because City residents are the majority of Muni users.

2. Employment Trend Approach to Cumulative Analysis

In this and other San Francisco EIRs, a land-use type of approach has been used to estimate the transportation impacts of both the proposed project and cumulative development. An alternate type of approach is to forecast travel demand based upon regional projections of employment share (employment trend approach).[6] Briefly, the fundamental differences between (and limitations of) the two approaches are:[7]

The land-use approach (as it has been applied in this EIR) has used net new office space actually proposed, approved or under construction (less space in buildings demolished to make way for new buildings) as the basis for travel generation. The land-use approach assumes that literally all of the currently proposed development in the downtown area will be constructed and fully occupied within the time frame of the proposed development and

TABLE E-1

TRAVEL DISTRIBUTION AND MODAL SPLIT FOR CUMULATIVE ANALYSIS

	OFFICE								
	Work Travel			Other Travel			Retail Travel		
Geographic Area	Geog. %1	Mode	%2	Geog. %1	Mode	%2	Geog. %1	Mode	%2
SAN FRANCISCO									
Downtown/Northeast	7.0			33.0			84.0		
(East of Van Ness,		Auto	9.0		Auto	2.0		Auto	3.0
North of Market		Muni	61.0		Muni	20.0		Muni	7.0
to the Embarcadero		BART	1.0		BART	0.0		BART	1.0
South of Market to 101)		Walk	29.0		Walk	78.0		Walk	89.0
Northwest	15.0			11.0			1.0		
(Richmond, Marina		Auto	31.0		Auto	15.0		Auto	10.0
Western Addition)		Muni	69.0		Muni	85.0		Muni	90.0
Southwest	13.0			13.0			2.0		
(Sunset, Parkside,		Auto	29.0		Auto	12.0		Auto	10.0
Ingleside, Excelsior,		Muni	62.0		Muni	59.0		Muni	80.0
Twin Peaks, and Upper Market)		BART	9.0		BART	19.0		BART	10.0
Southeast	5.0			7.0			2.0		
(Potrero Hill, Bayview, Hunters		Auto	26.0		Auto	13.0		Auto	10.0
Point, East and South of 101)		Muni	62.0		Muni	38.0		Muni	80.0
		BART	22.0		BART	50.0		BART	10.0
Peninsula	18.0			8.0			3.0		
(San Mateo and Santa		Auto	44.0		Auto	50.0		Auto	25.0
Clara Counties)		Muni	3.0		Muni	0.0		Muni	0.0
		BART	19.0		BART	30.0		BART	25.0
		SamT	7.0		SamT	10.0		SamT	0.0
		SPRR	27.0		SPRR	10.0		SPRR	50.0

TABLE L-1
(continued)

TRAVEL DISTRIBUTION AND MODAL SPLIT FOR CUMULATIVE ANALYSIS

	OFFICE								
	Work Travel			Other Travel			Retail Travel		
Geographic Area	Geog. %[1]	Mode	%[2]	Geog. %[1]	Mode	%[2]	Geog. %[1]	Mode	%[2]
EAST BAY	30.0			20.0			6.0		
(Alameda and Contra Costa Counties)		Auto	33.0		Auto	13.0		Auto	38.0
		BART	37.0		BART	79.0		BART	62.0
		AC	30.0		AC	8.0		AC	0.0
NORTH BAY[3]	12.0			8.0			2.0		
(Marin and Sonoma Counties)		Auto	58.0		Auto	70.0		Auto	70.0
		GGTB	35.0		GGTB	20.0		GGGTB	30.0
		GGTB	7.0		GGTB	10.0		GGTB	0.0

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[1] Percent of travel with origins or destinations in each geographic area.

[2] Percent of travel in each geographic area using listed mode of travel.

[3] GGTB stands for Golden Gate Transit Bus; GGTF stands for Golden Gate Transit Ferry.

SOURCE: San Francisco Department of City Planning, TJKM, Environmental Science Associates.

occupancy. No allowance has been made for less than 100% occupancy, for proposed developments that are never constructed, or for those which would not be occupied within the time frame of the proposed project.

The employment trend approach generates a total increase in employment in downtown that has taken account of loss of employment as industries and offices move out of the City, replacement of one type of industry with another (industry shifts), as well as, replacement of existing office space with new office space. The employment trend approach makes no implicit assumptions concerning occupancy rates or actual square footage of development constructed; rather, it generates total employment increases from a standpoint which assigns jobs by metropolitan sector (area) based upon extrapolation of past trends and which considers long-term industry shifts to, within, and away from each area.

Note that neither of the two approaches has attempted to project future changes in modal split.

To illustrate the differences in projections resulting from the two approaches, Table E-2 (page A-57) shows the total employment projections by the two methods (and the project's share thereof), the regional distribution of trips, and Muni's share of the new transit travel (and the project's share thereof).

As shown in the table, the employment trend approach predicts about 19% fewer employees in the downtown and about one percent less riders on the Muni than does the land-use approach. The employment trend approach would thus approximate the transit demand impacts discussed on page 78 of the EIR.

Several considerations concerning both of the methods need to be noted. The land-use approach, as it has been applied in San Francisco EIRs, analyzes impacts for the p.m. peak hour, whereas the employment trend approach analyzes the a.m. peak. Several reasons exist as to why one peak (or the other) may be the better one to analyze.

First, the p.m. peak may be more useful to analyze, in that actual observation shows that the p.m. peak has a greater overall effect on the local street network and transit system in the downtown area than does the a.m. peak, as more travel takes place during the p.m. peak. Also, transit service is more inclined to differ from scheduled times during the p.m. peak than during the a.m. peak, as operational delays have had an 8- to 10-hour period

TABLE E-2

COMPARISONS OF LAND-USE AND EMPLOYMENT TREND APPROACHES

			Regional Trip Share					
Approach	Downtown Employment Increase	Project[1] Share	S.F.	Pen.	E.B.	N.B.	Muni[2] Peak-hour Increase	Project[3] Share
Land Use	69,000	0.8%	49%	16%	24%	11%	12,750 (trips)	1.0%
Empl. Trend[4]	56,100	1.0%	50-54%	19%	17-21%	10%	12,900[5] (trips)	1.0%

NOTE: As explained in the text, comparisons between the entries for the two approaches must be made with the understanding that the land-use approach reflects increases in employment and transit demand based solely upon increases in downtown office space, while the employment trend approach reflects total increases therein based upon historical trends. The differences among the regional trip share figures reflect these and the other differences between the two approaches.

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[1] Employment generated by the proposed project, as a percent of the cumulative downtown employment increase.

[2] The Muni peak-hour increase is a demand projection (based upon existing and long-term employment trends) that is not dependent upon available or expected transit capacity.

[3] Muni peak-hour trips generated by the proposed project, as a percent of the cumulative downtown Muni peak-hour increase.

[4] These figures, represent the worst-case analysis under the employment trend approach reviewed and accepted by MTC, ABAG and Muni. Note that the land-use approach entries assume that an additional net new 17.3 million gross square feet of office space will come on line by late 1990.

[5] Based on 54 percent regional trip split to San Francisco (worst-case).

over which to accumulate. Finally, the on-ramps to the freeway/bridge system are greater bottlenecks (in the p.m. peak) than are the off-ramps (in the a.m. peak).

Conversely, the peaking characteristics of the a.m. peak may be more useful in that they are much sharper than those of the p.m. peak (i.e., a greater percentage of the peak-period occurs during a single hour). Also, as a result of the bridge system into San Francisco, travel inbound into the City is much easier to document, as tolls are collected on the inbound direction on the Golden Gate and Bay Bridges. Finally, a greater proportion of the travel occurring during the a.m. peak is employment-related; the p.m. peak includes shopping and pleasure trips which are not directly affected by increased office space.

The land-use approach, as it has been used in this Draft EIR, examines the p.m. peak because it has been observed to be the worst case for congestion on the City transportation system. This analysis does not reflect the spreading of the p.m. peak that is currently occurring, as all of the new trips have been assumed to take place in a single hour.

While the land-use approach assumes all new office space is fully occupied, the assumption of a functional vacancy rate of five percent is not uncommon.[6] With 17.3 million square feet of new office space assumed in the land-use approach to be occupied by 1990, a five percent vacancy would amount to approximately 865,000 square feet, representing 3,460 employees (at 250 square feet per employee), 700 of which would ride Muni in the p.m. peak hour. This adjustment for vacancy would thus reduce Muni peak-hour impacts in the cumulative analysis stated above by these 700 riders.

The land-use approach calculations have assumed transit capacity to be fixed at existing levels. The OER memorandum[7] points out, "It should be recognized that transportation is a more 'elastic' resource with many options for expansion including increasing existing capacity by using articulated vehicles, expanded car pool and van pool programs and increasing the peak commuter period through flex-time programs, among others."

If future office development does not occur along the lines of the past long-term trends as assumed in the employment trend approach, then the projections made in Working Paper I would be revised. The average annual growth during the period 1965-1980 was less than the growth per year proposed, approved, or under construction for the period 1980-1984.

The employment trend approach assumes average growth through 1990 would be at the lower historic rate, reflecting activity fluctuations from the current rate including slowdowns due to changing business conditions.

Until a forecast exists to determine how the current decade's cycle of development may differ from the past, a judgment of the applicability of results from Working Paper I may not be made. Consequently, this EIR has retained the land-use approach and presented this comparison of the employment trend approach. Both methods should be looked upon as describing potential scenarios of future conditions.

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[1] The regional distribution, office trip generation, trip purpose and peak hour percentage are from Attachment 1 of the Guidelines for Environmental Impact Review, Transportation Impacts, Department of City Planning, October 1980 and the modal split assignment is from Attachment 2 supplemented by survey data collected by Environmental Science Associates, Inc.

[2] Retail trip generation is from Trip Generation, Institute of Transportation Engineers (ITE), 1979. Rates have been adjusted from vehicle trip ends to person trip ends based upon an assumed vehicle occupancy of 1.4 persons per vehicle. The survey of retail travel was conducted by Environmental Science Associates at Embarcadero Center on Thursday, June 17, 1982 between 10:00 a.m. and 4:00 p.m.

[3] The percentage of work and non-work trips is from the Guidelines (see note 1) and from Urban Travel Patterns for Hospitals, Universities, Office Buildings, and Capitols, Report No. 62, National Cooperative Highway Research Program.

[4] East Bay auto occupancy is from data collected at the Bay Bridge toll plaza by the Metropolitan Transportation Commission; North Bay auto occupancy is from data collected at the Golden Gate Bridge toll plaza by the Golden Gate Bridge, Highway and Transportation District; Southern Peninsula auto occupancy is an estimate from Caltrans.

[5] The occupancy rate is from The Downtown Traffic and Parking Study, San Francisco Department of Public Works, 1970.

[6] Department of City Planning, Working Paper I, Projection of Long-range Transportation Demand, May 1982, prepared in cooperation with the Metropolitan Transportation Commission (MTC), the Association of Bay Area Governments (ABAG), and the Municipal Railway (Muni). Employment trend data was compiled by ABAG from trends in County Business Pattern (U.S. Department of Commerce, Bureau of the Census, March 12, 1979), with 1979 as the base year for future projections and regional distributions. Modal split data are from the 1975 Travel Survey prepared by MTC.

[7] The Department of City Planning, Office of Environmental Review (OER), has issued a memorandum, dated July 2, 1982, dealing with the subject of the differences in the land-

use and employment trend approaches, and recommending that both approaches be used in future EIRs to give a more balanced assessment of future peak transportation demand. This memorandum is on file with and available from the Office of Environmental Review, 450 McAllister Street, 5th Floor. The memorandum calls out some of the fundamental differences between the two approaches and also details the limitations of each approach.

APPENDIX F

The list of projects shown in Table F-1, page A-63 includes all office projects in the greater downtown area and the South of Market area that are under construction or have been approved, and all projects for which a Preliminary Draft EIR has been submitted to the City for review or for which plans are well defined, and all office projects in redevelopment areas that are under construction or for which Land Disposition Agreements have been approved by the San Francisco Redevelopment Agency Commission. Projects that were not definitive and/or appear to be inactive or withdrawn by the project sponsor were not included in the sumulative analyses.

Two redevelopment areas (Yerba Buena Center and Rincon Point - South Beach) and one private development (Mission Bay) are located in or near the greater downtown area. In the redevelopment areas the majority of building sites do not yet have Land Disposition Agreements (LDA) approved. Until such time as specific LDA's are approved, no estimate of travel demand can be made. (Thus, parcels for which no LDA exists have not been included in the cumulative analyses.) Development in the Yerba Buena Center (YBC) Redevelopment Area will be in accordance with the YBC Redevelopment Plan, as amended. Possible land uses that would be in accordance with the Yerba Buenaq Center Redevelopment Area Plan include commercial entertainment, convention facility (in place), cultural, downtown support service, exhibit/ballroom space, hotel rooms, institutional, light industry, market-rate dwelling units, subsidized dwelling units, office, park or plaza, pedestrian concourse, parking and retail.[1] Possible land uses in the Rincon Point - South Beach Redevelopment Area include hotel, housing, office, open space, public parking, retail and warehouse uses.[2] Mission Bay has not been included in the cumulative analyses as no application has been submitted to the City and it is uncertain what formal proposal may be made.

Existing office and retail space that would be replaced by new buildings was subtracted from the proposed new construction to better approximate the impacts the new buildings would have on transportation facilities. As shown in Table F-2, net new office and retail space is less than total new construction as a result of subtracting out existing office and retail space on sites proposed for new buildings. ("Net new" space is used to refer to the amount of new construction in excess of existing space on each site in terms of gross square feet of floor space. It does not refer to net leasable or net rentable floor space.)

APPENDIX F

(continued)

Existing office and retail space that would be replaced by new buildings was subtracted from the proposed new construction to better approximate the impacts the new buildings would have on transportation facilities. As shown in Table F-2, net new office and retail space is less than total new construction as a result of subtracting out existing office and retail space on sites proposed for new buildings. ("Net new" space is used to refer to the amount of new construction in excess of existing space on each site in terms of gross square feet of floor space. It does not refer to net leasable or net rentable floor space.)

Existing major office building construction in San Francisco is shown in Table F-3, page A-69.

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[1] Land uses from Draft Second Supplement Yerba Buena Center Final Environmental Impact Report, San Francisco Department of City Planning, May 28, 1982.

[2] Land uses from Rincon Point - South Beach Redevelopment Area, San Francisco, California, Final Environmental Impact Report/Environmental Impact Statement, San Francisco Department of City Planning, certified November 5, 1980.

APPENDIX F

TABLE F-1

CUMULATIVE DOWNTOWN DEVELOPMENT
AS OF JUNE 1, 1983

PROJECTS UNDER FORMAL REVIEW

Assessor's Block	Case No.	Project Name	Office Gross Sq. Ft. Total New Construction	Office Gross Sq. Ft. Net New Construction	Retail Gross Sq. Ft. Total New Construction	Retail Gross Sq. Ft. Net New Construction
110	82.129E	Embarcadero Terraces	139,000	139,000	3,000	3,000
113	82.418E	1171 Sansome	30,000	30,000	---	---
225	81.403ED	814 Stocktan	3,500	3,500	3,300	3,300
227	81.463E	505 Montgomery	354,300	300,570	12,100	-4,775
258	81.131E	Pine/Kearny	315,800	315,800	6,750	6,750
288	81.687ED	222 Kearny/Sutter	269,400	202,400	10,000	-8,400
331	81.448E	Mixed Use Develapment (M)	218,600	210,100	44,700	19,700
641	82.200CY	1735 Franklin (C)	8,600	8,600		
669	81.667ED	1361 Bush (C)	45,720	45,720	---	---
814	81.540E	101 Hayes	126,000	126,000	6,000	6,000
3702	81.549ED	1145 Market	137,500	108,500	8,000	8,000
3707	81.245DA	New Montgomery Place	227,500	209,700	2,200	-3,900
3708	81.493ED	71 Stevenson	324,600	324,600	6,200	6,200
3708	81.297ED	Lincoln Plaza	573,000	476,300	10,000	10,000
3717	81.183E	123 Mission	342,800	342,800	---	---
3733	82.29E	832 Folsom	50,000	50,000	---	---
3750	82.241E	600 Harrisan	228,000	228,000	10,000	10,000
3750	82.77E	642 Harrison (C)	54,400	45,900	---	---
3760	81.386	401 6th	7,000	7,000	---	---
3763	82.384EVD	400 2nd Street at Harrison (C)	71,500	49,500	---	---
3778	81.630ED	548 5th/Brannan	250,000	250,000	---	---
3786	82.33E	655 5th/Townsend	126,250	126,250	---	---
3788	82.352EV	640 2nd Street	39,100	37,400	---	---
3789	82.31EV	615 2nd/Brannan (C)	90,000	70,000	9,300	9,300
9900	81.63	Ferry Building Rehab	309,500	96,000	163,500	124,000
	TOTAL PROJECTS UNDER FORMAL REVIEW		4,679,970	4,141,540	320,050	214,175

(C) = Canversian (generally industrial and/or warehouse to office)
(M) = Mixed Use (affice/residential/canmercial)

TABLE F-1
(continued)

APPROVED PROJECTS

Assessor's Block	Case No.	Project Name	Office Gross Sq. Ft. Total New Construction	Office Gross Sq. Ft. Net New Construction	Retail Gross Sq. Ft. Total New Construction	Retail Gross Sq. Ft. Net New Construction
58	82.234E	Roundhouse	45,000	45,000	3,000	3,000
65	82.168V	990 Columbus	12,000	12,000	---	---
112	81.258	Ice House Conversion (C)	209,000	209,000	---	---
136	81.245	955 Front at Green	50,000	50,000	---	---
141	81.151EV	100 Broadway	13,000	13,000	---	---
143	81.353ED	1000 Montgomery (C)	39,000	39,000	---	---
146	83.99EC	644 Broadway	42,800	42,800	---	---
161	80.191	Mirawa Center	36,000	36,000	30,650	30,650
164	81.631D	847 Sansome	23,750	23,750	---	---
164	81.573D	50 Osgood Place	22,500	22,500	9,100	9,100
166	DR80.15	750 Battery	105,400	105,400	12,800	12,800
176	81.673	Columbus/Pacific (Savoy)	49,000	49,000	22,000	22,000
176	82.368ED	900 Kearny	25,000	25,000	5,000	5,000
228	81.610ED	569 Sacramento (C)	19,000	19,000	---	---
261	81.249ECQ	333 California (M)	640,000	466,500	15,500	15,500
262	81.206D	130 Battery	41,000	41,000	---	---
265	81.195ED	388 Market at Pine	234,500	85,500	10,000	-8,500
267	81.241D	160 Sansome	2,200	2,200	---	---
268	81.422D	250 Montgomery at Pine	105,700	65,700	8,000	8,000
270	81.175ED	466 Bush	86,700	86,700	7,800	2,200
271	83.13E	582 Bush	18,900	18,900	---	---
288	81.461ED	333 Bush (Campeau) (M)	498,400	458,100	20,900	20,900
294	82.870	44 Campton Place	7,600	7,600	---	---
311	82.120D	S. F. Federal	246,800	218,850	1,600	-9,440
716	81.581ED	Polk/O'Farrell	61,600	61,600	22,400	22,400
816	82.212ED	330-350 Gough (M)	16,000	16,000	---	---
647	82.24V	1581 Bush (C)	16,000	16,000	---	---
690	SFRA	Post/Van Ness	88,000	88,000	---	---
834	82.603E	25 Van Ness (C)	101,800	42,800	36,400	36,400
3518	81.483V	291 10th Street	25,700	25,700	---	-25,700
3524	82.137V	44 Gough (C)	30,000	30,000	---	---
3705	80.315	Pacific III Apparel Mart	332,400	332,400	---	---
3707	81.492ED	90 New Montgomery	124,300	124,300	3,350	3,350
3709	81.113ED	Central Plaza	353,100	136,300	17,400	17,400
3715	82.16EC	121 Steuart	33,200	33,200	---	---
3722	81.417ED	144 Second at Minna	30,000	30,000	---	---
3724	81.102E	Holland Ct. (C)	27,850	27,850	---	---
3729	82.860	774 Tehama	5,800	5,800	---	---
3732	81.548DE	466 Clementina (C)	15,150	15,150	---	---
3733	EE81.2	868 Folsom	65,000	65,000	---	---
3735	EE80.106	95 Hawthorne (C)	61,900	61,900	---	---
3738	DR80.5	315 Howard	294,000	294,000	3,200	3,200
3741	82.203C	201 Spear	229,000	229,000	5,200	5,200
3749	EE81.18	Marathon - 2nd & Folsom	686,700	686,700	35,300	35,300
3752	EE77.220	Office Bldg. (YBC SB-1)	11,000	11,000	---	---
3763	81.287V	490 2nd/Bryant (C)	40,000	40,000	---	---
3763	81.381	480 2nd/Stillman (C)	35,000	35,000	---	---

TABLE F-1
(continued)

APPROVED PROJECTS (continued)

Assessor's Block	Case No.	Project Name	Office Gross Sq. Ft. Total New Construction	Office Gross Sq. Ft. Net New Construction	Retail Gross Sq. Ft. Total New Construction	Retail Gross Sq. Ft. Net New Construction
3775	81.147V	338-340 Brannan (C)	36,000	36,000	---	---
3776	81.693EV	539 Bryant/Zoe	63,000	63,000	---	---
3776	EE81.59	Welsh Commons (M)	55,600	55,600	12,000	12,000
3787	81.306	252 Townsend at Lusk	81,900	81,900	---	---
3788	81.296Z	690 2nd/Townsend (C)	16,600	16,600	16,000	16,000
3789	81.552EV	625 2nd/Townsend (C)	157,000	157,000	---	---
3794	81.569EV	123 Townsend	104,000	49,500	---	---
3794		155 Townsend	19,000	19,000	---	---
3803	81.244D	China Basin Expansion	196,000	196,000	---	---
	TOTAL APPROVED PROJECTS		5,985,850	5,224,800	297,600	236,760

(C) = Conversion (generally industrial and/or warehouse to office)
(M)= Mixed Use (office/residential/commercial)

TABLE F-1
(continued)

PROJECTS UNDER CONSTRUCTION

Assessor's Block	Case No.	Project Name	Office Gross Sq. Ft.		Retail Gross Sq. Ft.	
			Total New Construction	Net New Construction	Total New Construction	Net New Construction
106	81.415ED	1299 Sansome	41,000	41,000	3,500	3,500
163	EE81.1	901 Montgomery	63,000	63,000	18,800	18,800
164	81.251D	936 Monigomery	21,500	11,500	---	---
166	CU81.7	222 Pacific at Front (C)	142,000	142,000	---	---
167	SFRA	Golden Gateway III	103,000	103,000	---	---
206	81.165D	401 Washington at Battery	13,200	13,200	1,800	1,800
208	81.104EDC	Washington/Montgomery (M)	235,000	233,300	4,000	-1,200
227	EE80.296	Bank of Canton	230,500	177,500	---	-800
237	DR80.6	353 Sacramento (Daon)	277,000	251,000	8,300	-2,000
239	DR80.1	456 Montgomery	160,550	160,550	24,250	24,250
240	DR80.16	550 Kearny	71,400	71,400	---	---
240	81.705ED	580 California/Kearny	329,500	260,000	6,500	6,500
271	81.517	453 Grant	27,500	27,500	6,200	6,200
287	81.550D	Sloane Building (C)	125,300	125,300	30,000	30,000
288	DR80.24	101 Montgomery	264,000	234,000	5,900	-14,100
289	81.308D	One Sansome	603,000	603,000	7,000	7,000
312	EE79.370	50 Grant	90,000	90,000	---	---
351	DR79.24	Mardikian/1170 Market	40,000	40,000	---	---
672	SFRA	Wealth Investments	104,500	104,500	---	---
738		One Flynn Center	25,000	25,000	---	---
3512	82.14	Van Ness Plaza	170,000	170,000	6,000	6,000
3702	81.25	1155 Market/8th	138,700	138,700	8,800	8,800
3708	80.34	25 Jessie/Ecker Square	111,000	111,000	---	---
3709	80.36	Five Fremont Center	791,200	722,200	35,000	17,300
3715		141 Steuart	80,000	80,000	---	---
3717	79.236	101 Mission at Spear	219,350	219,350	---	---
3717	EE80.349	Spear/Main (160 Spear)	279,000	279,000	7,600	7,600
3717	82.82D	135 Main	260,000	260,000	4,000	4,000
3718	DR79.12	Pacific Gateway	540,000	540,000	7,500	7,500
3724	SFRA	Yerba Buena West	335,000	335,000	---	---
3735	SFRA	Convention Plaza	339,000	339,000	---	---
3735	SFRA	Planter's Hotel (C)	20,000	20,000	---	---
	TOTAL PROJECTS UNDER CONSTRUCTION		**6,335,200**	**6,076,000**	**185,150**	**131,150**

(C) = Conversion (generally industrial and/or warehouse to office)
(M) = Mixed Use (office/residential/commercial)

TABLE F-1
(continued)

PROJECTS COMPLETED BUT NOT IN BASE CASE ANALYSIS

Assessor's Block	Case No.	Project Name	Office Gross Sq. Ft. Total New Construction	Office Gross Sq. Ft. Net New Construction	Retail Gross Sq. Ft. Total New Construction	Retail Gross Sq. Ft. Net New Construction	Date Occupied
196		736 Montgomery	40,000	40,000	---	---	
196	CU79.49	Pacific Lumber Co.	92,000	92,000	---	---	
263	CU79.12	101 California	1,265,000	1,257,000	24,700	-14,300	
292	DR79.13	Crocker National Bank	676,000	495,000	86,000	54,000	
351	DR79.133	10 U.N. Plaza	92,050	92,050	---	---	
762	SFRA	Opera Plaza (M)	50,000	50,000	---	---	
3712	DR79.11	Federal Reserve Bank	640,000	640,000	---	---	
3717	EE78.413	150 Spear	330,000	330,000	---	---	7/30/82
	TOTAL		3,185,050	2,996,050	110,700	39,700	
	GRAND TOTAL (ALL PROJECTS)		20,036,820	18,438,390	913,500	621,790	

Source: Department of City Planning

TABLE F-2

GROSS SQUARE FEET OF CUMULATIVE OFFICE AND RETAIL DEVELOPMENT IN DOWNTOWN SAN FRANCISCO AS OF JUNE 1, 1983

	Office (Gross Sq. Ft.)		Retail (Gross Sq. Ft.)	
Status of Project	Total New Construction	Net New Construction	Total New Construction	Net New Construction
Under Formal Review	4,679,970	4,141,540	302,050	214,175
Approved	5,985,850	5,224,800	297,600	236,760
Under Construction	6,335,200	6,076,000	185,150	131,150
Completed But Not In Base Case Analysis	3,185,050	2,996,050	110,700	39,700
GRAND TOTALS	**20,036,820**	**18,438,390**	**913,500**	**621,790**

TABLE F-3

MAJOR OFFICE BULDING CONSTRUCTION IN SAN FRANCISCO (IN GROSS SQUARE FEET)

Year	Total Gross Square Feet Completed	5-Year Total	5-Year Annual Average	Cumulative Total of Office Buildings[2]	Cumulative Total of All Downtown Office Buildings[3]
Pre-1960				28,145,000	24,175,000
1960	1,183,000				
1961	270,000				
1962	-				
1963	-				
1964	1,413,000				
1960-1964		2,866,000 (2,580,000)[1]	573,200 (516,000)[1]	30,725,000	26,754.000
1965	1,463,000				
1966	973,000				
1967	1,453,000				
1968	1,234,000				
1969	3,256,000				
1965-1969		8,379,000 (7,541,000)[1]	1,675,800 (1,508,000)[1]	38,266,000	34,295,000
1970	1,853,000				
1971	-				
1972	1,961,000				
1973	2,736,000				
1974	2,065,000				
1970-1974		8,615,000 (7,753,000)[1]	1,723,000 (1,550,000)[1]	46,019,000	42,048,000

(continued)

TABLE F-3

MAJOR OFFICE BULDING CONSTRUCTION IN SAN FRANCISCO (IN GROSS SQUARE FEET)

(continued)

Year	Total Gross Square Feet Completed	5-Year Total	5-Year Annual Average	Cumulative Total of All Office Buildings[2]	Cumulative Total of All Downtown Office Buildings[3]
1975	536,000				
1976	2,429,000				
1977	2,660,000				
1978	-				
1979	2,532,000				
1975-1979		8,157,000 (7,341,000)[1]	1,631,400 (1,468,000)[1]	53,360,000	49,389,000
1980	1,284,000				
1981	3,029,000				
1982	3,771,000				
1980-1982		8,084,000[4] (7,275,600)[1]	2,694,700[4] (2,425,200)[1]	60,635,600	56,559,600

[1] Total net square feet (90% of gross). Net new space is added at an increase factor of 90%, since it is assumed that space equal to 10% of a new building is demolished to make land available for the new replacement building

[2] Source: San Francisco Downtown Zoning Study, Working Paper No. 1, January 1966, Appendix Table 1, Part 1. For pre-1965, data include the area bounded by Vallejo, Franklin, Central Skyway, Bryant and Embarcadero. Also includes one-third of retail-office mixed use. For post-1964, data include the entire city.

[3] Gross Floor Space for downtown offices are included for the following functional areas: Financial, Retail, Hotel, Jackson Square, Golden Gateway, Civic Center, South of Market, and Outer Market Street as defined in the cited January 1966 report. For post-1964, the entire area east of Franklin Street is included.

[4] Three-year total and average.

SOURCE: Department of City Planning, March 15, 1983

TABLE G-1

PROJECTED EFFECTS OF DOWNTOWN OFFICE DEVELOPMENT ON REGIONAL HOUSING MARKETS

Housing Market	Net Project Demand in 1985	Gross Cumulative Demand 1983 to 1990[3]		Net[4] Housing Stock 1983-1990	Project Demand as % of Growth 1983-1990	Cumulative Demand as % of Growth 1983-1990
	Number of Households	Number of Employees	Number of Households			
San Francisco	60-124	11,100 to 29,500	7,900 to 16,400	12,000	0.5 - 1.0	66%-137%
North Bay[2] (Marin and Sonoma Counties)	53	8,850	6,800	36,800	0.1	19%
Peninsula[2] (San Mateo and Santa Clara Counties)	79	13,300	9,500	87,000	0.1	12%
East Bay[2] (Alameda and Contra Costa Counties)	131	22,100	15,900	111,800	0.1	15%
TOTAL	322 - 387	69,000	47,100	248,200	0.1 - 0.2	17%-20%

---

[1] The range of San Francisco employees and households based on a report prepared by Recht Hausrath Associates, referenced as Appendix C in the 101 Montgomery Street Final EIR, EE 80.26, certified May 7, 1981 (15-30% of all employees would reside in San Francisco and 1.4 workers would occupy each household) and "Office Housing Production Program (OHPP) Interim Guidelines," Department of City Planning, January 22, 1982 (40% of all employees would reside in San Francisco and 1.8 workers would occupy each household).

[2] Distribution of employees based on weighted average of expected employees in Federal Reserve Bank (EE 78207), 101 California Street (EE 78.27), Pacific Gateway, (EE 78.61), and Crocker National Bank (EE 78.298), from 456 Montgomery Street Final EIR (EE 78.178), page 167 (12% in the North Bay, 18% in the Peninsula, 30% in the East Bay).

Project workforce of 556 and a ratio of 1.3 workers per household for based on 1980 Census data.

[3] Cumulative housing demand calculated from data on office projects presented in Appendix F, Table F-2, page A-61.

[4] Net housing stock growth is based on "Projections 79," Association of Bay Area Governments, January 1980. Projections contained in that document for 1980-1990 were prorated to reflect 1982-1990 net housing stock growth.

Source: EIP Corporation.

TABLE G-2

HOUSING AFFORDABILITY BY HOUSEHOLD INCOME

Gross Annual Income Per Household or Per Individual	Maximum Affordable Monthly Housing[1] Expenditure	Housing Cost and Type of Unit	
		Monthly[2] Cost	Type of Unit (Price)
$ 5,000	$ 125		
8,300[3]	208		
10,000	250		
10,680	267	$ 267-	Census Median Rent[6]
11,560	289	289-	Studio Apartments[7]
15,000	375		
18,200	455	455-	Median Rent, All Units[7]
20,000	500		
23,520	588	588-	Rent, 3+ Bedroom Units[7]
25,000[4]	625		
27,300	683		
30,000	750		
35,000	875		
40,000	1,000		
40,880	1,022	1,022-	Lowest House Price ($95,000)[8]
45,000	1,125	1,125-	Census Median Value (104,600)[6]
50,000	1,250		
52,560	1,314		
55,000	1,375		
65,080	1,627	1,627-	Median House Price (151,203)[8]
101,880	2,547	2,547-	Highest House Price (236,750)[8]
300,000[5]	7,500		

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[1] The Office Housing Production Program (OHPP) Interim Guidelines, January 1982, define affordable housing as follows:

TABLE G-2
(continued)

Rental expenses not exceeding 30% of gross monthly income, adjusted for family size; and home ownership expenses not exceeding 38% of gross monthly income, adjusted for family size, including mortgage payments, property taxes, insurance, and/or homeownership association dues.

For the purpose of this table, 30% of gross monthly income is used to calculate housing affordability for both renters and owners. For owners it is assumed that eight percent of gross monthly income would cover property taxes, insurance, and/or homeownership association dues and other related expenses. No adjustment has been made for family size because family circumstances vary widely.

[2] Monthly housing costs refer to rents and mortgage payments for the housing prices shown in parentheses; sources of rents and house prices are as footnoted. Monthly costs of ownership housing were calculated as monthly mortgage expenses assumping 20% down payment, 30-year mortgage, and 16% interest rate, not including insurance, property taxes, and other related housing costs.

[3] U.S. Bureau of Labor Statistics, March 1981, "Area wage survey for the San Francisco-Oakland, California Metropolitan Area," $8,300 was the mean 1980 income if inexperienced file clerks, one of the lowest-paid office occupations listed.

[4] The $27,300 income figure was derived by inflating the $16,300 median income of downtown office workers from the 1974 SPUR survey through December 1981 by 67% using U.S. Bureau of Labor Statistics national wage information for nonsupervisory finance, insurance, and real estate sector employees since 1974.

[5] Montgomery-Washington Building FEIR, 81.104E, certified January 28, 1982. The median salary of wage earners at 601 Montgomery Street was estimated to be $52,560 and the highest salary for corporate officers $300,000, according to a 1981 survey.

[6] City Planning and Information Services, "1980 Census Information," March 1982: Rental data include residential hotels whose rent levels may be substantially lower than other types of rental dwellings and may therefore have an effect on the median rent.

[7] Department of City Planning, "Rent Survey," 1980. These data are based on a small nonrandom sample of newspaper ads and may not reflect true rental costs.

[8] San Francisco Board of Realtors, "Multiple Sales Service," October 5, 1981. (Annual data on housing sales prices including all homes sold from February 11, 1981 to October 1, 1981).

NOTE: The age of the 1974 SPUR study referenced in footnote 4 above and the small sample size of the 601 Montgomery Street survey referenced in footnote 5 limit the statistical accuracy of the data when applied to individual proposed office projects. These two sources constitute the only salary information available for downtown San Francisco employees.

SOURCE: Environmental Science Associates

TABLE G-3

SECONDARY EMPLOYMENT DISTRIBUTION IN THE BAY AREA AS A RESULT OF THE MULTIPLIER EFFECT

Sector	Employees
Agriculture and Primary Processing	15
Construction	37
Manufacturing	76
Transportation, Communications, Utilities	63
Trade	118
Finance, Insurance, Real Estate	98
Services and Government	201
TOTAL	610[1]

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[1] Total does not add due to rounding.

Source, EIP: Based on: Cooperative Extension Service, University of California, Berkeley, San Francisco Bay Area Input-Output Model 1967-1974, August 1978. The figures presented in this table assume that the jobs in the project would be primarily in the FIRE and retail sectors.

TABLE G-4

SUMMARY OF RECENT STUDIES ON FISCAL IMPACTS OF DOWNTOWN DEVELOPMENT

STUDY, AUTHOR, DATE	PURPOSE OF STUDY	DATA SOURCES	STUDY METHODOLOGY	CONCLUSIONS
"Fiscal Concerns" in Downtown San Francisco Conservation and Development Planning Program, Phase I Study, Sedway/Cooke, et al., October 1979, pp. 56-59	To qualitatively assess the likely fiscal impact of new development in the C-3 area under Proposition O.	SPUR STUDY (1975)	SPUR cost/revenue estimates for downtown in 1973 and for projected growth 1974-1990 were assumed. Proposition 13's effect on revenues and the possible need for increased transportation infrastructure were considered. Generalized conclusions about fiscal impact of new development were drawn.	1) After Proposition 13, "costs may exceed revenues in the downtown by as much as 25%." 2) "[N]ew downtown development will not solve the city's growing fiscal problem; without new revenue sources, development will make it worse in the long run."
Downtown Highrise District Cost Revenue Study, Arthur Andersen & Co., November 1980	To quantify for 1976-77 and 1978-79 how much revenue the C-3-0 area generated and how much it costs to provide city services to the area.	Data compiled from city records and through conversations with city officials.	Only revenues generated within the C-3-0 and costs of providing services to the C-3-0 counted. "The principle guiding the study methodology was to calculate the amount of revenue that San Francisco would lose and the costs that could be reduced if the Downtown Highrise District were a separate city."	The C-3-0 generated $56.79 million in 1976-77, or 61% more than the cost of city services to the area. In 1978-79, revenues were $53.29 million, or 48% greater than costs.
"Fiscal Considerations" Appendix C, 101 Montgomery Street FEIR, Recht Hausrath & Associates, January 1981.	To draw generalized conclusions about "how new development downtown in a post-Proposition 13 environment is likely to change the City's fiscal health from what it would be without new development."	SPUR Study, city records and conversations with city officials.	Under alternative assumptions about the cost/revenue balance in existing buildings and in new buildings, the fiscal impact over time of new development was compared to that of no new development.	"[A]n on-going process of new development would improve the City's fiscal situation.
Downtown Highrise District Cost/Revenue Study, David Jones, February 1981.	To quantify for 1978-79 the revenues generated by businesses in the C-3-0 and the service costs imposed on the city and BART by the C-3-0.	Arthur Andersen study.	The Jones study differs from the Andersen study primarily as follows: 1) Costs of BART (but not revenues to BART) are included; 2) Only revenues paid by businesses and building owners are considered; 3) Muni deficit is computed differently; 4) Most costs are estimated as a percentage of revenues rather than on the basis of actual service demand in the C-3-0.	The C-3-0 imposed costs of $94.4 million on San Francisco and BART, or 125% more than the revenues the area's businesses and building owners generated to San Francisco.
Fiscal Impacts of New Downtown High-Rises on the City and County of San Francisco, Gruen Gruen & Associates March 1981	To quantitatively estimate city revenues from the C-3-0 and costs of serving the C-3-0 in 1990, assuming the addition of 30 million square feet of building space in the C-3-0 between 1981 and 1990.	Arthur Andersen study; data compiled from city records and through conversations with city officials.	"Only direct effects are considered." Costs are only measured for services "provided within the physical limits of the C-3-0 district" and revenues are limited to "taxes on buildings within the district and the activities that take place within those buildings." Assumes the Arthur Andersen study is accurate and builds upon it.	In 1980, revenues from the 39 million square feet of building space in C-3-0 were 1.66 times as large as costs. In 1990, after completion of the 30 million square feet of new space, revenues from the entire 69 million square feet of C-3-0 building space would increase to 1.92 times as large as costs.

SOURCE: Recht, Hausrath and Associates, January 1981.

APPENDIX H
(continued)

AIR QUALITY

SAN FRANCISCO AIR POLLUTANT SUMMARY 1979-1981[1]

POLLUTANT	FEDERAL STANDARD[2]	STATE STANDARD[3]	1979	1980	1981	1982
Annual Geometric Mean (ug/m^3)[5]	75	60				
Annual Geometric Mean			42.0	52.1	56.0	57.0
Annual Exceedances			No	No	No	No
Lead						
3-month Average (mg/m^3)	1.5	None				
Highest 3-month average			0.95	0.53	0.35	---
No. of exceedances			0	0	0	---
1-month Average (mg/m^3)	None	1.5	---	---	---	---
No. of exceedances	---	---	---	---	---	---

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[1] 1979 data collected at 939 Ellis Street. 1980-81 data collected at 900 23rd Street.

[2] Federal standard is not to be exceeded more than once per year. Annual average standards are not be exceeded.

[3] State standards are not to be equalled or exceeded. The State 1-hour average CO standard was reduced from 40 ppm to 20 ppm in 1982.

[4] The federal standard is given in terms of Expected Annual Excesses which is based on a 3-year running average.

[5] The annual Geometric Mean is a single number which applies to an entire year of data. "No" indicates TSP concentrations did not exceed 60 (ug/m^3).

Note:
ppm = parts per million
ug/mg^3 = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter

Source: BAAMQD, Air Pollution in the Bay Area by Station and Contaminant, March issues, 1980-1983; and California Air Resources Board, California Air Quality Data, Annual Summaries, 1979-1982

AIR QUALITY

SAN FRANCISCO AIR POLLUTANT SUMMARY 1979-1982[1]

POLLUTANT	FEDERAL STANDARD[2]	STATE STANDARD[3]	1979	1980	1981	1982
Carbon Monoxide (CO)						
1-hour average (ppm)	35	20				
Highest hourly average			20	10	8	--
No. of exceedances			0	0	0	0
8-hour average (ppm)	9	9				
Highest 8-hour average			13.8	7.5	5.3	9
No. of exceedances			1	0	0	1
Ozone (0_3)						
1-hour average (ppm)	.12[4]	.10				
Highest hourly average			0.08	0.09	0.07	.08
No. of exceedances			0	0	0	0
Nitrogen Dioxide (NO_2)						
1-hour average (ppm)	None	.25				
Highest hourly average			0.16	0.17	0.11	.13
No. of exceedances			4	0	0	0
Sulphur Dioxide ($S0_2$)						
24-hour average (ppm)	.14	.05				
Highest 24-hour average			0.034	0.018	0.016	.012
No. of exceedances			0	0	0	0
Total Suspended Particulate (TSP)						
24-hour average (ug/m^3)	260	100				
Highest 24-hour average			117	173	103	106
No. of exceedances			1	6	1	3

Donald Ballanti
Certified Consulting Meteorologist

1424 Scott Street
El Cerrito, Ca. 94530
(415) 234-6087

September 2, 1983

Ms. Suzanne McAdams
Environmental Impact Planning Corporation
319 Eleventh Street
San Francisco, CA 94103

Subject: WIND IMPACT EVALUATION OF THE EMBARCADERO OFFICE TERRACES

Dear Ms. McAdams:

At your request, I have undertaken an initial evaluation of the probable wind impacts of the proposed project. My analysis is based on a site visit and a review of the project plans.

Winds in San Francisco are generally from the west, from the Pacific Ocean. Windspeeds, in general, are greatest in the spring and summer, and least in fall. Daily variation in windspeed is evident, with the strongest wind in the late afternoon and lightest winds in the morning.

The project site is the entire block bounded by the Embarcadero, Green, Front and Union Streets in San Francisco. The site is currently used as a parking lot. The project area lies east of Telegraph Hill and is characterized by one to four-story buildings. Building heights near the site range from 33 to 43 feet.

The project would consist of a 40-foot four-story building, housing mixed-uses, including office, restaurant and parking space. The main entrance would be on Front Street; parking access would be from Green Street.

The potential for adverse wind accelerations at ground level is determined by two factors: site exposure and design. In San Francisco, buildings that are known to cause uncomfortable wind conditions have the following characteristics:

- they are freestanding and exposed to prevailing winds
- they have wide, continuous faces, and,
- they extend well above surrounding buildings.

The proposed building does not have any of these characteristics and, therefore, does not appear to have the potential to cause adverse wind impacts at pedestrian levels. Wind studies are not recommended.

I hope you find this analysis useful. Please call if I may be of further assistance.

Sincerely,

Donald Ballanti

Donald Ballanti
Certified Consulting Meteorologist

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